

PAPERS READ BEFORE THE STATISTICAL SOCIETY OF  
MANCHESTER,

ON THE

## DEMORALISATION AND INJURIES

OCCASIONED BY THE

WANT OF PROPER REGULATIONS OF LABOURERS  
ENGAGED IN THE

## CONSTRUCTION & WORKING OF RAILWAYS,

VIZ. :

A Return of the Fatal Accidents, Wounds, and Injuries, sustained by Workmen engaged in the construction of the Summit Level Tunnel of the Sheffield and Manchester Railway; and a description of the Demoralisation which prevailed amongst them, with Observations; being a Letter by JOHN ROBERTON, Esq., Surgeon, President of the Society.

Statements on Railway Contracts and Railway Labourers, by ROBERT RAWLINSON, Esq., Engineer to the Bridgewater Trust.

Statements as to some of the effects produced in this country by the past expenditure of capital on labour in the construction of Railways; together with observations on the principles of Legislation and Jurisprudence applicable to the public protection by prevention of fatal accidents, and the better regulation of labourers engaged in dangerous works; by EDWIN CHADWICK, Esq., Barrister at law, one of the Commissioners of Inquiry into the labour of Young Persons in Factories, Commissioner of Inquiry into the means of establishing an efficient Constabulary Force, &c. &c.

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## PREFACE.

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MY friend, Mr. Robertson, Surgeon, and President of the Statistical Society of Manchester, having forwarded to me a letter, containing a return of the number of the labourers who had been killed, or grievously maimed, whilst engaged in cutting an extensive railway tunnel, together with a description of the demoralising circumstances under which the injuries were inflicted, I wrote, in answer, such observations and suggestions, in the way of remedies, as the facts which had come to my knowledge, on the subject of the employment of labourers in the construction of railways, enabled me to make. Mr. Robertson brought before the Society the return, with his own letter, and my observations upon it, together with a supplementary paper, on the same subject, by Mr. Rawlinson, the experienced engineer of the Bridgewater canal, who has himself had extensive experience in the management of railway excavators; and the Society have requested that these papers may be printed, for public information.

Those who read these papers will concur in the opinion, that it is a most serious duty to make known the facts, whilst the grants of privileges, involving new engagements of large masses of labourers, in new works, are under consideration, and to promote the examination of all suggestions of measures for the prevention of the evils already experienced from the want of due precautions. It is most important also to publish this information for the immediate warning of the promoters of railways not yet executed, but which have received the sanction of parliament, and for the guidance of railway directors, who are often entirely uninformed as to the evils described. Although the warning may be expected to introduce many voluntary precautions and improvements in the regulation of labour on railways, for ill-regulated labour will generally be found the most expensive labour, still, precautionary legislation can scarcely in any point be safely dispensed with.

Since the papers were read, I have from time to time, and as opportunities permitted, consulted engineers, and persons of practical

experience, on the subject, and have greatly extended the paper of observations which I first returned in answer to Mr. Robertson's letter. These, though the best my time allowed me to put together, I am aware are still very imperfect, especially where I endeavour to develop the principle of pecuniary responsibility for the loss of life or limb, in the employment of capital in works attended by danger. I should, however, feel myself, to some extent, a party to such evils, if I failed to urge, however imperfectly, on every opportunity, the evidence of the practical working of a principle the adoption of which would, I am convinced, considerably diminish the number of those so called accidents which are avoidable, and materially alleviate the suffering occasioned by those which cannot be prevented.

EDWIN CHADWICK.

## ON THE DEMORALISATION AND INJURIES

OCCASIONED BY THE ABSENCE OF DUE RESPONSIBILITY FOR THE  
PROPER SELECTION AND REGULATION OF LABOURERS IN THE  
CONSTRUCTION AND MANAGEMENT OF RAILWAYS.

ON an average, more than half the capital expended in the construction of railways is expended for the earth-work and tunnelling. If the sanction of Parliament be given to any considerable proportion of the new railway works now presented for its consideration, and if no new precautions be taken, in respect to the mode in which they are conducted, some eight, ten, or twelve millions per annum, or as much as the annual expenditure for the whole of the effective and non-effective naval and military force of the country, will shortly be expended, as wages for the payment of such labour as will subsequently be described. From the great number of new works, simultaneously undertaken, and the enormous prices paid for hurried and imperfect professional services, it appears to be very certain, that the superintendence by competent engineers, and superior officers, of practical experience, must be diminished rather than increased. Not only must the superintendence be diminished, but the proportion of untrained and inferior workmen in such assemblages, will be increased, and greater disorder and evil than heretofore, is to be apprehended, and should be guarded against. From information which I had obtained, previously to the receipt of Mr. Robertson's and Mr. Rawlinson's papers, and which is confirmed by them, I am enabled to state that the course of railway labour, and the expenditure of wages upon the labourers taken from the agricultural districts, were generally as follows:—

The labourer has been detached from the habits and influences of his home and his village, and set to work amongst promiscuous assemblages of men attracted from all parts, has received double his ordinary amount of wages, and has been surrounded by direct inducements to spend them in drink and debauchery. If he were a married man, little or none of his earnings have been returned to his wife and family, who in his absence have commonly obtained parochial relief on the ground either of "desertion by the husband," or of his "absence in search of work." Whether he were married or single, the whole of the excess of money earned beyond his ordinary rate of wages has been expended, under the inducements to which he has been subjected; and at the completion of the works he has been discharged penniless, and has returned discontented, reckless, deteriorated in bodily and mental condition, or he has, with others of the same class, entered the ranks of the dangerous swarms of able-bodied mendicant vagrants and depredators, of whom the committals within the last few years have been so largely increased.



In the case of deaths occurring in the prosecution of such works, the relief of the destitute widowhood and orphanage, (as well as the relief of all consequent sickness and inability to work or obtain work after illness,) has fallen upon the distant parishes from which the labourers have been frequently taken.

The employment, it is apt to be said, is transitory; though two or three years are enough to create habits, and are not a small proportion of a labourer's period of working ability: the evil effects, however, have been permanent. The extra labourers available for such undertakings—the loose men unattached to any place of work—could not be expected to be of the best description of labourers; but, from the absence of proper regulations, the good have been deteriorated, the indifferent characters made positively bad, and the bad worse; and when children have been living amidst these assemblages, they too have been depraved by communication with them, by the neglect of their education, and by the total absence of moral training and religious observances.

Of the large contributions made to the criminal population by the railway labourers at the expiration of their work, I take the following examples from the report of one of the prison chaplains who carries out the most important practice of inquiring into and reporting on the circumstances which have caused or influenced the crimes for which the prisoners under his spiritual charge have been committed to prison. The Rev. Mr. Burnett, the chaplain of the Lewes gaol, in his report for the year 1838-39, states, that “the railway works have sent forty strangers to prison.”

In his report for the year 1839-40, he states—

“I have before noticed that a large addition has been made to the year's catalogue of crime by the Brighton and London railway works. I now subjoin a table of particulars, from which it will appear that among the crimes committed, some of the gravest in the calendar are to be found. I also specify the portion of the crime which may be considered as accidental to the county and temporary in its duration, the perpetrators of it being strangers, drawn hither by the works, who, when the railway is finished, will betake themselves to some other similar field of operation.

“These stupendous works, here and elsewhere, have raised up and daily accumulate in the country a very extraordinary body of men, to whom, in my humble opinion, too much attention cannot be directed, whether by the moralist or the political economist.

“Drawn together from all parts by thousands,—most of them men of prodigious strength, violent passions, and ignorant to a fearful and an almost incredible degree—separated from the kindly influence of family and friends, and from the usages of civilised life—having no home but the public-house by day, and a barn or shed or temporary hut, in which several are packed together, by night,—having no other pastime after their hard toil than drunkenness and fighting, for which their large earnings furnish them but too abundant stimulus—enjoying little or nothing of a Sabbath, either in body or soul, as appears from most with whom I have conversed, and all this carried on for five or six and more years with a large proportion of the number, they are, literally, an increasing mass of heathens in the bosom of a Christian land. What the end of it may be, it would be well to consider.”—*Report of Chaplain of Lewes Gaol, Oct. 19, 1840.*

Again, in his report for the following year, 1841-2, he notices the operation of the same cause upon the commitments.

“Among other causes for this melancholy increase, the cessation of the railway works holds, as I believe, the chief place, for thereby very many were left without employment who had for some years laboured at those works, and contracted there

habits of extravagance and insubordination, to which they were, before, comparatively strangers. The same cause will, in a measure, account for the diminished number in the calendar, as those of the previous quarter were swelled by a large number of strange navigators, now scattered to other scenes of similar employment."

The only existing legislative provision of which I am aware, applicable to the labourers employed on such works, is that rendering the directors or the shareholders liable for the expences of any special constables who might be called on to repress one of the evils attendant on such assemblages, namely, riots and breaches of the peace, where the ordinary constabulary was insufficient. The statute of the 1st and 2nd Vict. c. 80, recites that "whereas great mischiefs have arisen by the outrageous and unlawful behaviour of labourers and others employed on railroads, canals, and other public works, by reason whereof the appointment of special constables is often necessary for keeping the peace, and for the protection of the inhabitants, and the security of the property in the neighbourhood of such public works, whereby great expences have been cast upon the public rates of counties, and the districts chargeable with such expences." And it is then provided, that the directors or the shareholders shall bear the expences of the special constables employed in the restoration of the peace.

This one measure of repression has been of very little avail of itself, even for the very secondary object of repression, and the preservation of the peace, independently of any regulation of the labour itself. On the Brighton Railway works, some better regulations were, I believe, subsequently made. They were, at all events, attended with a decrease of the number of commitments of this class of labourers to the prison.

In his report for the year 1844-5, the chaplain states—

"In my last report I ventured to observe that, judging from past experience, we had to fear no small increase of crime from the railway works now stretching across the southern portion of the county; but, so far, I rejoice to say that the fear has proved groundless. The committals from this source have been comparatively few and trivial; and if the winter be passed over in the same way, it will redound greatly to the credit of the large body of labourers there employed, and those who have the supervision of them, in this very important respect."

The following letter from Mr. Robertson develops the common causes of demoralisation which, with the class of labourers in question, has led to such consequences as those described in the chaplain's reports. The work described by Mr. Robertson has been completed, and it is therefore to be received as an example of evils to be avoided. It may be thought, as it would be to be hoped, that those evils were peculiar to that work. But, however they may have varied in character and degree, they certainly have been, and are, common to other works, as described in the paper written by Mr. Rawlinson from his own practical observation. Other engineers have given me verbally similar descriptions of the evils experienced on other works. The question which forces itself for consideration is, whether it is beyond the legislative power or administrative skill in this country so to regulate the application of the large masses of capital devoted to the employment of labourers in the construction of new railway works, as to avoid or diminish the disorders described in these narratives, and to prevent the disbanding of such bodies of work-people being the creation of hordes of mendicants and reckless depredators.

I have not entered into the question as to the effects which the large

demands for labour must have upon the established branches of industry—a most extensive and important inquiry, for which there are at present no satisfactory statistical data, either for estimates of the additional numbers of labourers which the proposed new works will require, or of the numbers of labourers unattached to regular employments who may be available. It is an error to assume that the greater proportion of persons enumerated in the census returns, under the general head of “labourers,” which avowedly comprehends “miners, quarriers, porters, messengers,” and really includes the assistants to masons, bricklayers, and other craftsmen, are persons unattached to any particular occupations. The case may be determined by the consideration of the effects produced on the labourers employed alone. The facts, when examined in respect to ill-regulated labour, will be found to be confirmatory of the dictum of an eminent philanthropist, that “Deep fluctuating wages are the bane of happiness as well as of morality among improvident and uncultivated minds. Stagnation is ruin: a fall produces the sensation of a tax; a rise drives a man into sensual excesses;—excesses which, in one who, for want of education, has no fund of self-amusement, no other tastes to gratify, are fatal to health, industry, and content.” In respect to the collateral effects of such labour, I should in general concur with the German agriculturalist, Von Thaer, who states as the result of his own practical observation: “When the demand for labourers is increased, the latter naturally endeavour to get their wages raised; and thus the price of labour is advanced throughout the whole country. An increase of the price of labour, from this cause, so far from being prejudicial to the agriculturalist, is, on the contrary, most advantageous to him. It is at once the effect and the cause of the diffusion of comfort and ease throughout the country. In the case of the agriculturalist, it is, perhaps, connected with still greater advances; but it is certainly and invariably with additional advantages; for comfort, which is the fruit of industry, necessarily causes an increase of consumption, and with that a higher price of provisions. There is, however, an exception to this rule, viz., when the increased demand for labourers does not arise from any certain branch of industry, but merely from some speculation, or some temporary works, as the establishment of a new road, the cutting of canals, &c.; it is then that the sudden elevation of the price of labour becomes prejudicial, and is frequently very embarrassing to the farmer. If governments would avoid the derangement of the agriculture of their country, they must never, in cases of this nature, levy all their labourers in the country itself.”—*Von Thaer*, vol. i. p. 62. Under arrangements which would insure to the labourer employed the real and permanent benefit of the wages he earns, and wise limitation of the quantity of work executing at one time, and consequent equalisation of the demand for this description of labour, I have a strong belief that a general rise of agricultural wages, produced by the great extent of the new demand for labour, will take the case out of Von Thaer’s exception, and may be made to produce eventual as well as immediate benefit to the great bulk of the labourers in agriculture. The present consideration is, however, as to the immediate means of preventing the demoralisation of the class of labourers directly engaged in the new works.



*" Manchester, November 13, 1845.*

" MY DEAR SIR,

" You and I have often conversed together on the best means of promoting the health and happiness of the labourers of this great country—a noble theme! and one not likely to lose its interest.

" I write to recal to your recollection some things I mentioned relative to this, when I had the pleasure of last seeing you, or rather to narrate them more fully than I was then able to do.

" In these times of unprecedented social progress, new aspects in the condition of the labouring classes, new advantages gained for them by the increasing wealth of the community, or new causes of injury and debasement coming into operation, may naturally, in a world of mingled good and evil, be expected to present themselves. At this moment there is plenty of capital, and plenty of labour; and when the two come hand in hand, they are among the greatest of blessings, or let me rather say—*ought to be*. And the proviso is needful. For observation convinces me that excellent as these blessings are, they may be so perverted in the bestowal, as to result in injury to the health of the labourers, increase of ignorance and vice, and strange to tell, increase of what one would little anticipate—pauperism. I will remind you by an example what the evils are I am alluding to.

" In June, about five months ago, I was carried by a friend\* to inspect the famous viaducts and other works on the Sheffield, Ashton-under-Lyne, and Manchester Railway, in particular the Summit Tunnel, one of the longest in the kingdom. It is to what we observed in connexion with this latter great undertaking, that I wish to draw your attention, for here we found the work still in progress, and hundreds of men engaged on it, whose huts form a scattered encampment extending between three and four miles in length, over the bleak hilly moor under which the tunnel is driven. Cast your eye on a map of Cheshire, and you will see a narrow tongue of land, at the easternmost corner, which extends between the counties of Lancaster and Derby, to join Yorkshire. At this junction, or rather approximation, of these four counties, is the great Summit Tunnel, which, by the aid of gunpowder, has been carried through the sandstone and millstone grit rocks whereof the central ridge of hills, in this quarter, is chiefly composed. The tunnel commences in Cheshire, not far from the small village of Woodhead, and terminates, after a course of five thousand one hundred and ninety-two yards, within the county of York. The surface of the intervening ground is chiefly covered with dark heath and bog, and is as barren and dreary as it is possible to conceive. At certain distances along the line of tunnel the moor is pierced by five shafts, averaging in depth about six hundred feet; and it is around these five shafts, and at each termination of the tunnel, that the huts of the workmen cluster.

" The huts are a curiosity. They are mostly of stones without mortar, the roof of thatch or of flags, erected by the men for their own temporary use, one workman building a hut in which he lives with his family, and lodges also a number of his fellow-workmen. In some in-

\* " W. J. Wilson, Esq. one of the surgeons of the Manchester Royal Infirmary. I may be permitted to intimate, Mr. Wilson is a witness as to the accuracy of the facts stated in this communication, and has rendered me aid in the work of collecting them.

stances as many as fourteen or fifteen men, we were told, lodged in the same hut; and this at best containing two apartments, an outer and an inner, the former alone having a fire-place. Many of the huts were filthy dens, while some were whitewashed and more cleanly; the difference, no doubt, depending on the turn and character of the inmates. In stormy weather, and in winter, this must be a most dreary situation to live in, even were the dwellings well-built and comfortable. At No. 1 shaft a workman told me that he has cut a road through the snow, from the door of his hut, four yards deep.

"My friend and I, on reaching the Woodhead end of the tunnel, were fortunate enough to meet with a gentleman whom we knew, officially connected with the works; and it was from him we obtained information which led us, ultimately, to institute a more particular inquiry concerning the health and morals of the workmen; and especially as to the dangers attending the mining, and the treatment of the men by their employers.

"By this gentleman we were told that the numbers employed in and about the tunnel, might reach nine hundred or a thousand, besides women and children; that the work, which would be completed, probably, in November, had been in progress upwards of six years; and that at one period as many as about fifteen hundred labourers were employed, but that the numbers had fluctuated. The hands, he said, were excessively drunken and dissolute—that a man would lend his wife to a neighbour for a gallon of beer—that a large proportion of both sexes (more than half, he stated) laboured under some form of syphilitic disease; and, in a word, that it was difficult to conceive of a set of people more thoroughly depraved, degraded, and reckless. With reference to the danger attendant on the work, he stated that there had been about thirty fatal accidents within and on the tunnel (thirty-two I am given to understand) since the commencement of the working, besides several maimed or disabled; and an almost incredible number in a lesser degree wounded and variously injured.

"List of the accidents of all kinds, excepting such as were fatal.

"23 cases of compound fractures, including two cases of fractured skull.

"74 simple fractures, including

"3 fractures of clavicle.

"2 ————— scapula.

"1 ————— patella.

"1 ————— astragalus.

"140 severe cases; including burns from blasts, severe contusions, lacerations, dislocations, &c. One man lost both his eyes, and one the half of his foot. Most of these accidents were connected with other injuries—for instance, a man had his arm broken by a blast, the limb being also much burnt, together with one eye, and all that side of his head and face. There were also several cases of broken ribs among these, and in connexion with other injuries.

"There have also been about four hundred cases of minor accidents, including trapped and broken fingers, (which form a large proportion of them, *seven* of them required amputation,) injuries to the feet, lacerations of the scalp, bruises, broken shins,—many of these minor cases were occasioned by drinking and fighting.

“The foregoing is not a complete list (you will please take notice) of injuries *not fatal*, because I as yet have no returns from a surgeon who, for about a couple of years (I believe) attended on the men employed in the eastern half of the tunnel.

“Moreover, we were told, what I mention with hesitation, that a serious proportion of the accidents was owing to the men *going to work more or less in a state of intoxication*. We asked if there had been religious instruction provided for the people, or the means of public worship? Our informant answered in the negative, adding that there was one school at the Woodhead terminus, supported by the men in the vicinity, for their children; that he had heard of Methodists attempting to hold a prayer meeting there, but, he believed, with little success: also, that certain clergymen used sometimes to visit among the men, but this had not been recently.

“Having been painfully impressed with what I witnessed and otherwise learned concerning these poor people, I told my tale, on my return to Manchester, to an excellent Moravian, the Superintendent of the Manchester and Salford Town Mission, who volunteered to pay a visit to the tunnel the following Sunday, and to give me the results of *his* inquiries and observations.

“By him I was informed that the labourers were indeed in a demoralised condition, and ‘no wonder,’ said he, ‘for the work goes on by night as well as by day, and on *Sunday* the same as other days, and such has been the case from the commencement.’ On the Sunday following, the same worthy person again went thither, entering the huts and conversing with the workmen. His first impressions were now confirmed and strengthened. He assured me that the workmen and their families were in a most brutish state; but as to the men lending their wives to each other, he remarked that many of the women in the huts were not wives, but ‘tally-women’—i.e. women who had followed the men as their mistresses.

“On the case of these people being represented to the managers of our Town Mission, an agent was selected to visit and labour among them for the term of three months. It is from the daily journal kept by this missionary, (a person of experience, temper, and remarkable tact,) and my own observations on a subsequent visit to the huts of the workmen, that I supply you with the following particulars:—

“1. Working on Sundays is constantly practised. I do not now allude to the pumping of water, under certain circumstances, from the shafts, and other work, in its nature necessary, and therefore allowable; but to the carrying on of the ordinary operations of blasting, digging, and casing the tunnel with masonry. The Missionary was directed to enter the tunnel on Sundays, that he might have ocular demonstration as to whether such work went on or not. I copy from his journal, Sunday, July 20th. ‘On our way along the tunnel, we met with twenty-seven men and several horses at work,’ &c. Not being properly equipped for the wet journey on this occasion, he returned, after advancing a very little way. Sunday, August 3d. ‘Went into the tunnel, passed No. 2 shaft, and saw about a hundred miners, labourers, and others at work; also, outside the tunnel, at the Manchester end of the entrance, about eighteen or twenty men were employed, boring and blasting the rock: a number of shots went off, and shook



the school-house, at the time when we were engaged in prayer, at our afternoon meeting.' Sunday, August 17th. 'Went to No. 1 shaft—the engine was at work, sending down stones to the tunnel—saw ten men employed in removing the stones from various places, filling the tubs, &c.—and was told that as many men were employed at the bottom of the shaft, removing the stones to convenient places for the masons. I also conversed with several men, at work in the quarries.' Sunday, August 31st. 'Spent above two hours in the tunnel; went in at the west end, and walked through to Dunford. In the tunnel I saw seventy-three men at work. Miners were working at two places. One company of masons were at work. Some men at the bottom of No. 1 shaft were receiving stones from above, and were removing them in waggons to various places for the masons, &c. &c. The road, at some places, was covered with water, ankle deep—some places knee deep.'

"In various other entries of the same journal, there are allusions corroborative of the foregoing statements respecting this most unwarrantable breach of the law of mercy, and of the statute book; as also testifying to the ill effects of the practice on the morals and happiness of the labourers.

"2. No provision has been made at the tunnel at any period, in reference to religious instruction, public worship, or visitation of the sick and wounded, by any of those having a pecuniary interest in the works. A small chapel of the Establishment stands three miles distant from the Woodhead terminus; but I could not learn that any of the people went thither, except when there was a funeral from the tunnel. One or two clergymen, and the Methodists, as I before hinted, have occasionally done a little—nothing, however, worth mentioning. The missionary's journal, and the aspect and manners of the people, furnish evidence of a state of neglect and destitution, in reference to all that concerns religion, utterly disgraceful to the directors of the railway, and to the conductors of the works; and to the public also, who have for so many years heedlessly and criminally winked at it.

"The forlorn condition, in a religious sense, of the hurt and the sick—of that portion of them who have not been carried to the Manchester Infirmary—cannot be imagined by those who are in the habit of regarding England as a Christian country, and that, however much people in health may neglect religion, the sick and the afflicted must, at all events, be within reach of its influence and consolations. Nothing, indeed, can be further from the literal truth than such a fancy. There have been instances of destitution, in this particular, such, it is probable, as would scarcely occur in one of our most remote colonies. As an example, take the case of a fine powerful workman, who had the spine fractured in such a manner as to preclude all hope of recovery. Although this man pleaded again and again to have the Scriptures read to him, with religious counsel, the request was in vain; for, after remaining many days in a sinking condition, he was suffered to expire without having received the least attention of the nature he so earnestly craved.

"Formerly there was a school at shaft No. 3, besides that already mentioned at the Woodhead terminus, but the former was discontinued upwards of twelve months ago. The schoolmaster is supported in part out of a fund, which I shall presently speak of.



"3. The wages are good, or rather, it may be said, are very high. Joiners get 5*s.* per day,—masons 6*s.*—these work ten hours a day. Miners obtain from 4*s.* to 5*s.* ; at present these work eight hours, owing to the excessive wetness of the tunnel ; formerly they worked ten hours.

"4. The hands are paid once in *nine* weeks, and the payment is at a public house. From the Missionary's journal, I find that July 11th was pay-day, after a nine weeks' interval. On the 14th, he writes that everywhere there were fights, disorder, and drunkenness. He says, on this day, to one of the workmen—' Why are you here, amongst these drunken people ? ' ' I am waiting for my money, Sir.' ' I thought you had all been paid on Saturday.' To this the workman answers, it might be still two or three days before all were paid. The Missionary asks, what is the reason of such delay—the workman replies, that he knows no reason, unless it were to keep the men idle till they had spent all their wages.

"5. There is a fund, held by the contractors, for the benefit of the men ; into this each workman, married and single, pays out of every day's wages, one penny-halfpenny. The fund is for the payment of the surgeon—the support, in part, of the schoolmaster—for such of the children as attend school, pay a small weekly sum besides) and to provide each man on the sick list with an allowance of 8*s.* per week. Independently of this fund, it is the custom, in case of a death, for each workman to pay one shilling into the hands of the contractor, the amount being for the expenses of the funeral, and for the widow, or other near relative of the deceased.

"6. By the railway, there is easy and cheap carriage of goods from Manchester, Ashton, and other places, to the Woodhead terminus. Nevertheless, it is, perhaps, to be expected that a crowd of people, encamped on a desert moor, should have to pay rather high for their provisions. These poor people, however, pay an inordinate price for every article. On my last visit, I heard little but complaints from the workmen and their wives, of the dearness and badness of the provisions—this was in the beginning of October. For flour, they paid 2*s.* 8*d.* and 2*s.* 10*d.* per stone of fourteen pounds ; for tub-butter, (of very indifferent odour,) 1*s.* 1*d.* ; for brown sugar, (the worst sample,) 8*d.* ; treacle, (commonest), 5*d.* ; bacon and butchers' meat, 8*d.* ; but the most surprising thing was the price of potatoes, namely, 1*s.* 2*d.* the score. Thinking, that as the highest price in Manchester was only eightpence, they were imposing on my credulity, I inquired at several huts, widely apart, and received the same answer,—1*s.* 2*d.* per score. The beer, at the public-houses, represented as very inferior, is sold at 6*d.* per quart.

"7. The inferior quality and high price of the provisions, varying from twenty to fifty per cent. and upwards, above what the same class of people paid in Manchester, may, perhaps, be thus accounted for : the shops and beerhouses belong directly or indirectly to the contractors ; and, although, as before stated, the men receive their money-wages, that is, those who have any to receive, at long intervals, there is no difficulty in their obtaining their wages at any time in the form of printed money-tickets, wherewith goods and beer can be purchased, and with which all, or nearly all, the provisions and drink of the workpeople are *actually* purchased. The tickets in question are of

two descriptions, provision tickets and beer tickets; the former are obtained from the clerk of the works under certain regulations as to time; the latter, daily, at all times and with no other limitation than the sum that may be due to the workman. Even this limit, I was told, is often overstepped. To show in what manner the beer-tickets drain the hands of their earnings, take this example, given me by one perfectly familiar with the habits of the place. A workman carries a five-shilling ticket to one of the beer-shops, and asks to have out of it, a quart of beer. The drink is furnished, and the ticket with 'quart' written on the back, goes upon the file of the publican. The man has, it may be, glass after glass, gets intoxicated, and at length, in this state, goes home. On returning again, the following day, trusting to the ticket on the file, it will often happen that he finds his credit exhausted; he must bring another ticket: altercation ensues, the man accuses the publican of cheating, and thus uproars, fights, and (it may be surmised) the grossest roguery, are of perpetual occurrence. I refrain from saying more on the present subject; some things were stated to me concerning *this*, the very worst and most ruinous description of truck, which I hesitate to credit. It was evidently a sore subject with the work-people, one of whom exclaimed to me, 'They give us great wages, sir, but they take it all from us again.' Everywhere there were sullen looks, complainings, and gloomy discontent, chiefly in reference to the *quality* and *price* of the provisions.

"8. The danger from accidents and the calamitous destruction of life I have already adverted to. In the Missionary's journal, July 8th, occurs this incidental allusion to the subject: 'Going over the moor, this morning, met two women. One said, Have you not been sometimes to pray for Johnson?' I said I had. He is dead, said she; I have just laid him out; it is but little more than six years since I came to live on these hills, and he is the twenty-ninth man I have laid out, and the first of them who died a natural death.' I have, likewise, you will remember, mentioned that a number of the fatal and other casualties were owing (it might be difficult to get *proof* of the fact) to the men going to work affected by drink; and I may now further state what the intelligent surgeon at the tunnel remarked to me, that many of the fatal accidents had occurred on Sundays; the reason he could not discover. My own opinion is that the cause would be found in the greater prevalence of drinking on that than on other days.

"The people, I refer to the men, women, and children, don't give you the impression of enjoying vigorous, comfortable health. Of course there are many exceptions to this remark. Some of the younger children appeared flabby, and others very pale; and the adults wore a certain look of exhaustion or dissipation, which my Moravian friend attributes to the night-work that constantly goes on, the universal drunkenness, and the irregular hours of sleeping. Many of the night-workers, in his opinion, drank in the day, when they ought to have been in their beds. I noticed also that a number of the men had coughs, which they attributed to the moisture of the tunnel, wherewith every thread of their clothing was soaked before they had been a quarter of an hour at work. I said to a woman in

a hut, 'How can ten or fourteen lodgers in one hut dry all their wet clothes by a single fire?' She answered that 'the clothes were seldom half dry.' The surgeon too attributes the coughs of the men a good deal to the humid state of the huts, originating in this very cause, as also in a degree to the inhaling of the dense gunpowder smoke with which the tunnel is commonly filled.

"The foregoing are not pleasing details, but you will think them interesting for the sake of the sufferers, and important to be known in order that some remedy may be applied. I formerly remarked that labour and plenty of capital to pay for it are blessings of the greatest value, but I have now brought forward enough to prove that, by the thoughtlessness (for much may be attributed to the want of thought) and the cupidity of these new dispensers of labour—the directors and the makers of railways—such blessings may be so perverted as to become to a large extent, causes of debasement and wretchedness.

"When one glances at a railway map of England marked with lines which are completed, with those lines in progress, and others about to be made, and with more still soon to be brought forward; it is impossible not to stand amazed at the amount of labour which will be required. The number of workmen with their families even now thus employed, must be very great; and we are plainly, as yet, but at the entrance of this field of boundless labour, for the payment of which not tens but hundreds of millions of pounds sterling are ready to be told down. Pray is this illusive, or is it real? I suppose we must allow that it is sober reality. Well then, abuses springing up in connexion with this class of projects, are likely, if unchecked, to become enormous abuses.

"There are some circumstances in regard to railway construction, which I imagine have not been hitherto much adverted to, even by the projectors, and not at all by the public, who, nevertheless, are a deeply interested party. One of the most important, the only one I will mention, is that of having to draw the workmen hastily together, without selection or regard to character, and encamp them very generally, along uninhabited and often desert tracts of country, where are neither houses in which they can lodge, provision shops for their supply, places of worship and schools for secular and religious instruction; nor, what is of the last importance, intelligent, disinterested people at hand to notice and check illegal, fraudulent practices, on the part of the railway contractors.

"Evils such as I have adverted to, as existing at the Summit Tunnel, must, of course, be met and remedied, and that before it is too late; and it is the government alone that can meet them with effect. It may be encouraging to call to mind the abuses and oppressions incident to factory labour, some twenty-five years ago, and how successfully these have been combated by the enactment of wise laws, and by a system of vigilant government inspection. During an experience of nearly twenty-eight years in this county as a medical practitioner, I am able to testify to the improvements that have taken place in the health and happiness of the factory hands, as well as in the respectability of the masters, owing, mainly, to the enlightened regulations under which the latter are now compelled to conduct their establishments. Lead us not into temptation! It is ever well to have the



incitements to do wrong, lessened or removed. But what worth the mention, let me ask, is the cotton manufacture, almost confined to the two counties of Lancaster and Lanark, in comparison with the gigantic railway undertakings present and projected?

“Let only the existing manner of employing labour and dealing with the labourers, in railway construction, continue for a few years longer, and we shall have the entire country, from Cornwall to the Orkneys, swarming with tens of thousands of debased men and, I will add, women and children, as destitute of the elements of religious and moral knowledge or of a sense of duty and propriety, as hordes of Indian savages; and where is he who will then be bold enough to devise, or, if devised, to apply the remedy? Even now the evils are wide spread, for it must not be supposed that they are confined to the Summit Tunnel.

“It will be answered, I am aware, that it is easy for a mere spectator to point out and expatiate on abuses, and thus to cast obloquy upon parties with whom they are alleged to have originated; that, in fairness, it ought to be borne in mind that navigators are a class of men the most demoralised and disorderly that can be named, and that, as a contractor in the present scarcity of labourers, is compelled to employ, without selection, all who apply, to assume that he must be able to secure for his workmen (*such* workmen) a favourable position in reference to the maintenance of comfort and of good morals, is as unreasonable, as the thing supposed is in itself impracticable. Now it would be useless to attempt to meet this kind of argument otherwise than by showing that the abuses in question are manifest and indisputable, also of most formidable magnitude, and likely to spread; and that it is desirable, on the ground of humanity and the public good, they should be put an end to. A contractor might, no doubt, find much to say in extenuation of the charges I have advanced; but the public, you will probably agree with me, ought hardly to listen to the defence. If we can have railways constructed only in connexion with the present evils, then it were well to be without them. I, however, of course, do not regard the evils as existing of necessity: I think them remediable. As respects the alleged rudeness and depravity of the ‘navigators,’ when this has been conceded (though many affirm that the genuine navigators are a fine manly race of people) it offers no sufficient excuse for the treatment they receive: rather it suggests the most powerful motives for treating them differently. Viewed in the ‘raw material’ (if I may use a homely provincial phrase) they are, at any rate, no worse than other labourers. The deteriorating processes they are subjected to, alone make the difference.

“I would not be supposed to imply, far from it, that the railway contractors, whether at the tunnel or elsewhere, are more grasping and oppressive than other men exposed to similar temptations. I don’t desire to excite indignation against either particular persons or a class, but against a system which is now being pursued, under the pressure of novel and peculiar circumstances, whereby on English labourers, the children of our own soil, are inflicted evils such as I have been attempting to portray. A contractor has often no easy part to act: in the outset he has generally to encounter the keenest competition which the directors of a railway company can by any



means contrive to raise. It matters nothing seemingly that the agreement should be made at a price ruinously low. Hence contracts are sometimes far from profitable : and it may, in some instances, perhaps, be to save himself from loss that a contractor is driven to make what profit he can (often an enormous profit) out of the bowels, as it were, of his thoughtless, improvident workmen. This is the charitable view of the case. It is to be feared, on the other hand, that the plundering of the labourers, by a system of truck, enters in some instances into the calculation of both directors and contractors ; and on the government it will devolve to teach these parties, the directors and the contractors alike, that the law, forbearing or even tardy though it may seem, is their master, and has an arm to reach even to them, and to compel to a different course of procedure.

"I may be permitted, in concluding, to say a word for the character of the work-people themselves at the tunnel. They are generally ignorant, and with yet fewer exceptions, reckless and barbarous ; but their natural feelings remain ; these have not, as yet, been perverted, as in large towns, either by socialism or any other form of vulgar speculation. During three months that the missionary daily visited the huts and held hundreds of conversations, sometimes discussions, with the inmates, he was not only never insulted, but in no instance was he repelled or treated with rudeness ; and his instructions and admonitions were received as favourably, he has assured me, as would have been the case among the lower classes of Manchester and Salford, the subjects of his ordinary visits.

Yours faithfully,  
(Signed) JOHN ROBERTON.

"P.S. I ought not, perhaps, to withhold a circumstance so much to the credit of these poor people,—a number of them purchased from the missionary, at somewhat reduced prices, Bibles, Testaments, and Prayer Books, amounting, altogether, to 128 copies ; or, to state particularly, twenty-two Bibles, seventy Testaments, thirty-six Prayer Books.

"To EDWIN CHADWICK, Esq."

In respect to the remedies for the evils stated, as arising from the mode of employing labourers on such works as the one described by Mr. Roberton ; I will first address myself to the cases of the "fatal accidents" both on account of their own importance, and because efficient measures for the prevention of such occurrences must indirectly govern both the selection of labourers and the careful direction of their labour.

I know that in the construction of some of the longer lines of railway there has been, as in the instance in question, a greater loss of life than the public are aware of. Thirty-two killed out of such a body of labourers, and one hundred and forty wounded, besides the sick, nearly equal the proportionate casualties of a campaign or a severe battle ! The losses in this one work may be stated as more than 3 per cent. of killed, and 14 per cent. wounded. The deaths (according to the official returns) in the four battles, Talavera, Salamanca, Vittoria, and Waterloo, were only 2·11 per cent. of privates ; and in the last forty-

one months of the Peninsular war the mortality of privates in battle was 4·2 per cent., of disease 11·9 per cent.

In general, as I have already stated, the relief of the orphanage and widowhood consequent on the casualties in the construction of railways, has fallen upon the ratepayers of the parishes (frequently distant) in which the labourers who fell had settlements.

I have elsewhere had occasion, in respect to the fatal casualties occurring to labourers employed in other descriptions of works, to advance as a general principle of justice and as a measure of prevention, that those who erect machines, or conduct large and dangerous works, or undertake public conveyance, should be pecuniarily responsible for all their unavoidable, as well as for their avoidable consequences.

If it be assumed that the loss of life has in all the instances arisen from "pure accidents" which are entirely unpreventible, yet the adjustment of the consequent pecuniary losses, so as to bring these unavoidable, and therefore necessary, consequences, of the works to be borne by those who undertake and profit by them, though it might increase the expense of the works by an insurance charge, which in some cases would be paid by the party insured, would be attended with important benefits, in giving bounties on the discovery of means to prevent or to save that charge.

It may, however, be confidently alleged that the effect of thus making the parties responsible for the whole of the pecuniary consequences of their own works or acts, would in a very short time be to show that the large proportion of the so-called "accidents" are preventible.

The usual course of proceedings in the construction of railways and similar works appears to have been this. The directors have let the work to contractors, who again frequently let it out to sub-contractors, so that, although not given by the directors to the lowest, it is frequently held by the lowest class of contractors. As the work has proceeded, there have been fallings in of masses of earth, or of loose strata, and men have been killed. On the occurrence of these events, there being no one to investigate the causes, coroners' juries, immediately summoned, having themselves no engineering knowledge, are told that the earth has "unexpectedly fallen in," that none of the workmen appeared to have apprehended danger, and as a matter of course, a verdict of "accidental death" is returned. Engineers have, however, expressed to me confident opinions, that the majority of these accidents are to be traced to the want of foresight, or to cupidity and the neglect of due precautions,—the lower class of contractors being sensitive to the smallest outlay for precautions, and insensible to the danger the consequences of which they do not incur themselves. A frequent cause of these deaths is the practice of cutting away too great a depth at once, and allowing the earth to fall, to save the expense of moderate lifts. The older and more experienced navigators are aware of the dangers of the practice, and prevail upon the younger and less experienced of the labourers to go in front whilst such work is carried on.

The danger in deep cuttings of taking the earth out at great lifts at once is well known and universally acknowledged, and yet it is sometimes persisted in, even though experience shall have shown its danger in the particular instance, because it is less costly. An engineer has informed me of one case in which this practice was continued, though

repeated "accidents" happened, many of them fatal. Nor was the plan of operations changed, until no fewer than thirty lives having been sacrificed, the directors of the railway felt compelled to interfere, and proposed the plan of moderate lifts to be adopted at the end of the work. It is easy to perceive why these deep falls should be so excessively dangerous. It is not so much from the mass of earth being so great as to crush by its weight any on whom it may fall, as from its fall not being distinctly indicated beforehand, for often the earth will be giving way below before the cracks become evident at top, and therefore, before the watch at the top can give warning of the danger. It is, perhaps, impossible to define before-hand what height of lift can be safely practised, though certainly extreme height should be absolutely prohibited. The point of safety will constantly differ according to the nature of the soil and the state of the weather, and its determination must be in a great degree left to the judgment of those concerned.

Suppose the principle of pecuniary responsibility were in operation, and the directors and shareholders had to bear the expenses of the maintenance and education of the orphan children up to the age of working ability, and the compensation of the widows for the loss of their husbands' aid and support, incurring an expense of three or four hundred pounds for each life lost by one of these accidents\*—all of which expense now has to be borne either by the rate-payers or by individual families, (who have also to bear the pain of bereavement,) the directors would, as a consequence, (or it may be submitted should be required to) concentrate all or part of the responsibility on the person who has the best means of preventing the accident, namely, the contractor, and will make him liable. They will find it expedient to bind him by the terms of his contract to make good all such losses, and they will have a powerful motive to select not only respectable and responsible contractors, who could make good the pecuniary losses, but men of proper skill and intelligence to avoid them. The contractor would transfer his liabilities to a better class of sub-contractors, and these would, in working under such circumstances as those described, find it to their interest to cut away safely at moderate lifts.

A large proportion of the fatal accidents are, however, ascribable not to cupidity, but to mere ignorant recklessness. For example: one prevailing cause of numerous accidents in railway construction, is the imperfect mode generally adopted, of detaching the horse from the loaded waggon of earth as it approaches the face or "tip of an embankment." One man drives the horse, and another man runs with the waggon and gets before it to detach the horse. The constrained attitude, the velocity of seven or eight miles an hour, and the unsafe footing, often upon clay, of the man upon whom the duty devolves, frequently make him fall across the rail, the waggon wheels pass over him, and he is killed or maimed for life. In 1840, Mr. Butler Williams, who was acting as assistant engineer on the

\* Estimating the value of a labourer, by actual contract prices for maintenance and education, at 4s. 6d. per week from birth, the capital expended or invested in each labourer of twenty years of age is £245, or at thirty years of age, £350. In general, every adult trained labourer may be said to be, in this pecuniary point of view, as valuable as two hunters, or two race horses, or a pair of first-rate carriage horses.



Great Western Railway, endeavoured to call attention to a very simple contrivance which was tried there successfully and adopted. It enabled the driver to detach the waggon without assistance. This contrivance, a moveable hasp, connected with the leading rein, cost only ten shillings, and it saved the labour of one man. Yet, only in a very small proportion of cases, perhaps not one in ten, was any attention paid to it. Life after life is sacrificed, of which the morning paper\* of the day on which this is written, furnishes an example. Had the proposed insurance charge or the principle of pecuniary compensation to relations or survivors been in operation, it may be confidently affirmed that the cause of the calamity would have been most seriously considered, and that not a day would have passed without active efforts to prevent future loss. The directors would not be required to stay to investigate; to invent means of prevention, or devise regulations for their enforcement; the operation of the contractor's interest would do that for them, and the directors would themselves find that they saved in the trouble of superintendence, and were eventually no losers in money by the course proposed.

The recommendation to impose similar responsibilities on the directors or on the owners of machinery employed in large manufacturing operations (and afterwards for the mining operations) was not adopted, because it was said the principle was a "new one." I find, however, that it has been adopted in Prussia and Austria in the laws for the regulation of mines, and am assured it works well, though carried out imperfectly. In both countries it is provided that the accidents or sickness arising to the workmen in mines shall be paid by a sick fund, "deducted" from the wages, which will, with the lowest class of labour, be in fact an addition to the wages, for workmen cannot generally be procured unless wages be actually paid to them (free of all such deductions) equal to the ordinary rate of remuneration. The expenses thus fall, as they ought, directly on the parties directly benefiting by the works. The following are the articles of the Prussian code:—

"Art. 214.—The proprietors of the mines are bound to take care of the miners who are wounded or fall into bad health in their service."

"Art. 215.—When the provincial laws do not contain any express provisions thereon, the person who works the mine shall pay to the sick or wounded workman four weeks' wages if the produce of the mine does not cover the expense of working, or if it be only just equal to it, or if it be required to defray the antecedent expenses of the mine, and when the mine produces a sufficient dividend, the workman shall be paid eight weeks' wages in case the illness lasts that length of time."

\* FATAL ACCIDENT ON THE RICHMOND RAILWAY.—On Monday afternoon, an accident, which we regret was attended with fatal consequences, occurred in that portion of the works of the Richmond Railway, contiguous to the proposed junction with the South Western Railway, at Falcon-bridge, Battersea. About half-past four o'clock on the above afternoon, a young man, named Giles, who was employed in driving trucks loaded with earth, had detached his horse from the truck at the usual distance from the "tip" (the place where the load is shot,) when, from some unexplained cause, he fell in front of the truck which at the time was descending an incline, and two wheels momentarily passed over his chest. The truck was laden with between three and four tons weight of earth. He was deprived of life almost instantaneously.—*From the Morning Chronicle, December 31.*



“Art. 216.—If the illness last a greater length of time, the miners shall be supported out of the sick fund.”

“Art. 217.—The expenses of medical treatment, and of burial of a miner, wounded or killed by accident, shall be defrayed from the same fund.”

“Art. 218.—The widow of a miner has also the right to claim the gratuitous wages fixed by article 215.”

“Art. 219.—The gratuitous wages granted to the miner in case of wounds or death are not allowed if the miner have killed or wounded himself with premeditation, or by any gross neglect, or by working otherwise than in the mine.”

“Art. 220.—If the wound or death has been occasioned by malice or the gross neglect of a third person, the latter shall indemnify the sick fund, and the proprietors of the mine.”

I must observe, that the shifting from the undertakers of such works to the public, the pecuniary consequences even of *gross* negligence, is an exception wearing *prima facie* the appearance of justice, but from observations of my own, I should be able to prove that it is of most injurious influence on the condition of the working classes, and thence upon all classes of society. In the course of the inquiries into the labour in factories, I have heard it declared in respect to some fatal accidents, that they arose entirely from the recklessness and indiscretion of the workpeople themselves. “Might they not, then,” I have asked, “have been easily avoided by engaging as workpeople persons of ordinary discretion?” “O yes, certainly!” was the usual answer. “We warned them, over and over again, but it was of no use.”

Now, it may be asked of these employers, by society at large, “Why should *we* have to bear the consequences of your employing indiscreet labourers?” It is, however, in all such cases, a consideration of a more extensive political and social bearing than is, probably, suspected, that this shifting of the pecuniary consequences of accidents, caused by indiscreet labourers, from those who have, to those who have not the means of employing better hands, operates directly in diminution of the value of discreet and trustworthy labour, in diminution of the demand for training and education, and serves as a charter for ignorance and recklessness.

I may, however, here notice an objection urged in the case of the owners of dangerous machinery used in manufactures made to me in conversation on this subject by a chairman of a railway company;—“Why should *we* peculiarly be subjected to the principle of pecuniary responsibility, which is equally applicable to other branches of employment?” To which the answer was by another question;—“Why should the evil be continued, and a just and proper arrangement in this case be deferred, until the like arrangements can be made in similar cases which are not yet under consideration, and which there may be no means of bringing under consideration?” The application of the principle ought, no doubt, to be co-extensive with the evil. In England and Wales the deaths registered as from violence are upwards of eleven thousand per annum, of which a large proportion are the deaths of adult labourers engaged in dangerous works. (Vide examples, Sanitary Report, p. 113, 193—8, 205, 6.

From another branch of employment in the general business of con-

veyance—the conveyance of persons and goods by sea—I would adduce a practical illustration of the sacrifices of life and property incurred by the ignorant recklessness maintained in consequence of negligently allowing proper responsibilities to be shifted. The illustrative particulars were evolved in the course of an inquiry as to the practical value of a good training and education for parish apprentices for the sea service, as shown by the experience of the value of educated and uneducated seamen.

Captain Alderley Sleigh, who had served both in the king's and the merchant seamen's service, gave the following illustrations of the differences. These particulars, though distant, and apparently irrelevant, will be found pregnant with corroborative proof as to the practical influence of the extensive principles of pecuniary responsibility on the habits and condition of the population :—

“What,” he was asked, “are the differences you have observed in their relative value as seamen, between those seamen who have been educated and those who are uneducated; that is, those who have been so far educated as to have so much general intelligence as might be shown by their taking up a book and reading for amusement or instruction when not on duty, and those who had no such capacity or disposition?”—“I have always found the educated seamen the most capable of performing their duty, no matter what that duty might be, whether it were a duty of danger or one of skill, provided their acquired knowledge be regulated by discipline and directed by corresponding intelligence on the part of the officer, insomuch that were I fitting out a vessel myself, I should always, as I have hitherto done, prefer the educated men, because I should get the greater amount of work from them, and get it better done, and because I should have the most confidence in their fidelity. In short, I would rather work a vessel of 600 tons, say, with 18 men, provided they were educated, than 25 uneducated; I am now speaking of the mere amount of work to be got from the men, without reference to their morality or general good conduct. But of course the intelligent and moral conduct of the men will be found also to have its pecuniary value in respect to the safety of the vessel. For example: if an illiterate seaman be on the watch and be placed to look out for land, he will have little or no regard emanating from principle, to the consequences of his negligence, and will, without making an effort of mental rectitude, indulge himself in sleep; on the contrary, the educated man will be moved by the sense of character, perhaps also by a perception of what is dependent on his performance of duty, and will be true to it without the necessity of watching him. It is not to be said the uneducated man is so far ignorant as not to see the danger. He does see it; he can hardly fail to be aware of what must be the consequences to his own person, but either from insensibility to moral character, or from some obtuseness arising out of ignorance, he does not care for it—he indulges himself carelessly—with him the mate has to be constantly on the watch, and to be a driving task-master—the educated man does his duty with less labour of overlooking and driving; an ignorant man in doing his work, even if the fate of the ship depends on its correctness, will most frequently do it so as will save himself trouble, it being sufficient for him if it makes an appearance to the eye whatever it may be in reality. For instance, in setting up a shroud or stay, if he be not attentively overlooked, it is very probable that he will not take proper care and trouble to secure the end of the lanyard, being desirous of getting over the work; on the security of the stay or shroud may depend the security of the mast, and on the mast the safety of the vessel and the lives on board, his own life included. Hence the necessity of a constant eye over the actions of ignorant and reckless men, and constant rebukes for negligence. They have no mental firmness or self-control against indulgences. For instance, if you send a boat with four men on shore, three uneducated and one educated and orderly, if there is delay, it is odds that the three ignorant men are found drinking in the first public-house, and the better educated and trained man in the boat as attentive as he can be in such company to his duty. These circumstances are of constant and daily occurrence, and a large proportion of the immense maritime loss which the country annually

sustains will be found to be traceable to the ignorance and incompetency of this much neglected class of men, as well as attributable to other equally lamentable evils existing at present in the mal-organisation of the mercantile marine. When a general casualty happens at sea, if the ship is in danger, the first danger the captain has to arrest is from the ignorance of the men. His first anxiety will, perhaps, be to have the spirit casks stove in, to prevent the men getting at them, and if defeated in the attempt, the ignorant men will be the first to rush to get into the boats and cut them away, by which their own danger is increased. You are never free, in cases of emergency, from the dangers of the panics of ignorance. Since such men are not to be acted upon by moral motives, you are compelled to flog and use other means of personal coercion.

"Seeing the pecuniary advantages in respect to certainty and safety, as well as comfort and convenience in respect to the transaction of business, which the employment of well-trained, sober, and moral men gives, has there been no feeling manifested, no exertions made by the owners of the mercantile marine to establish mercantile schools, and to obtain a better educated class of sea apprentices and seamen for the sake of their own interests?"—"None whatever, that I am aware of; on the contrary, it would almost seem such an object is discouraged, for, I think in 1819, some efforts were made to get up an institution for the elementary education of sea boys and maritime apprentices, when they came into the port of London after a long voyage, (which period is the most important occasion for giving them nautical and other instructions, when they have so recently seen and felt its practical advantages,) but the attempt entirely failed; although of such national importance and so easily effected, no encouragement was given it. That class of boys is entirely destitute of instruction. But the owners have no feeling in favour of education; for, indeed, their interests, it would appear, are, if anything, entirely the other way."

The consequences of the inadvertent exemptions of natural responsibilities extend, moreover, beyond the labouring classes, by diminishing the demand for higher qualifications, for skill and science in the plans, as well as in the construction of such works. Thus, a newly-built manufactory falls down, and twenty or thirty persons are killed or maimed. On inquiry, it turns out that the cause of the disaster is the ignorance of the person employed as builder, who has injudiciously placed heavy weights on beams, which, if he had consulted existing knowledge, he must have been aware could only have borne much less weight, and that skilfully adjusted. The risks of failures may have been deemed so inconsiderable, as not to have made it worth while to incur the expense of obtaining the services of an engineer, really qualified, by scientific knowledge, to construct the works with perfect safety. I say really qualified, because in no profession, perhaps, is there so large a proportion of bold, rapacious quackery as in the professions of civil engineering and architecture. But if the aggregate expenses incurred by the sufferers and their relations, and by the ratepayers consequent upon the injuries done to the workmen, (and which could not be deemed for less than £6000,) were charged on the parties profiting by or constructing the works, and were added to the expense of reconstruction, then the employment of a skilled and scientific engineer, with the knowledge requisite to insure safety, would be really a cheaper course, and, therefore, more usually adopted. With this increased demand for skill and knowledge in the men directing such works, we should not have, as at present in this empire, with all its great undertakings, only one or two small colleges for the education of civil engineers, and these struggling feebly for existence with the aid of subscriptions and contributions.

To revert to the illustration of the pernicious effects of the absence



of proper responsibilities, by insurances, in the other field of labour in which the like effects are displayed. The witness was asked :—

“How does it arise that the interests are adverse?”

He replies :

“From a variety of motives : from being perfectly irresponsible ; from there being no authority to investigate their actions or scrutinise their conduct ; and from the destructive effects of insurance in removing all motives to care. No one can go into the city, or have transactions with the fitting out of merchant ships, without witnessing, in daily transactions, the fatal extent of the carelessness which prevails in the selection of the master, officers, and men, and in the equipment of merchant vessels. Any man who can procure a loading for the vessel from any foreign port, will seldom be refused the appointment of master, or have any inquiry made into his character. I have even known a Portsmouth publican who commanded a vessel trading from Lisbon to London.”

“Was this man versed in navigation, or capable of taking an observation, had the vessel driven out of its course?”—“No : he had evidently not the most distant conception of it, but depended on the empirical knowledge of one of the seamen. I once sailed from London with ninety persons (in 1835) in a steam-vessel which was highly insured, commanded by a man whose thorough ignorance and habitual drunkenness were such, that I was called upon by the officers and crew, for the safety of the vessel and lives, to take the command out of his hands, which I did. When he got on shore he cut his throat in a fit of *delirium tremens*. The man’s character must have become known to the owners of it, had it been their interest to make any inquiry upon the subject. I once came home from Portugal in a brig of two hundred tons, when the second mate was the only one on board who knew navigation, the master being perfectly ignorant of that science, the result of which was, that, in a run of five or six days, with a fair wind, we made Cape Clear instead of the Land’s End, being bound to London from Cape Finisterre. Seeing the evident danger of such ignorance, I was compelled to interfere to control the vessel. Such instances are constant and notorious from the circumstance of *examination* being neglected, and qualification being considered unnecessary in the merchant service. Not only is there no interest in getting good hands, but there is a fearful effect in going short-handed. Merchant vessels are shamefully inadequately manned. I once came to England in a brig which could only afford two hands to each watch. The man at the helm was frequently obliged to leave his post to let go ropes in a squall at night. In one case the vessel was almost lost from this circumstance, off Cape St. Vincent. In a moderate gale it was necessary to cut away from the yard a fore topsail, which could not be furled from her having only three men and two boys in a vessel of 250 tons.”

“If the lives of the men are lost, does the widowhood or orphanage, or any such loss, fall on the owners?”—“No : on the contrary, the owners frequently gain. In the case of the loss of the vessel, there is no claim for wages, and the parish supports the widow and the orphans, if any of the men happen to be married.”

“Are the losses ascribable to ignorance, and are those losses very great?”—“Yes : I believe it has been ascertained, beyond contradiction, that the number of British ships which are lost, is more than one in twenty-four ; and that property to the value of nearly three millions annually is thus lost to the nation. Chiefly through ignorance and the present system of nautical insurance, which assures any vessel on good premium, however unsafe or decayed. Further, that for every *seventeen* sailors who die, *twelve* are drowned or lost by shipwreck ; and that nearly two thousand perish annually in the deep. Thus hundreds of widows and thousands of children are thrown on the precarious charity of the public.”

I would here direct attention to the fact, that of the fatal accidents which occur in the working of railways after their completion, a large proportion are ascribable to the indiscretion and ignorance of the engine-drivers, or of the attendant workmen. If it be a shocking thing to entrust a ship and the lives of passengers and seamen to an ill-informed captain, how much worse would it be to entrust them to



a common seaman ! and yet a locomotive engine may require as much intelligence and discretion as a ship ; and this engine, with the lives of some two hundred or more of passengers, is entrusted to the discretion of a common labourer, destitute of the knowledge of the principles on which the action of such engines depend, in general not carefully instructed and trained in the management of the engine which he guides, even for ordinary occasions ; and if anything unusual or extraordinary happens, he is as much at a loss as the most ignorant, for the want of training and the knowledge of the principles which would best prepare him to meet all contingencies. Those, however, who have not been trained or educated in early life, have, commonly, a slowness of perception and action, such as described by Captain Sleigh, and an apathy even to visible danger to themselves, which after education does not cure. Scientific, or such technical instruction as would be required to be efficient, must be imparted to minds of a better order. An influential director of an important line of railway, thought it a sufficient answer to some observations I made to him in objection to the practice of employing common labourers as engine-drivers, that the company gave them very high wages,—as much as two pounds a week. High wages, with such a class of men, only increases the danger ; for it generally leads to an increase of drinking, as it appeared on the investigation of one case, for the men had doubled their allowances of porter, which, without producing visible inebriety, must produce a comparative torpor of the faculties. The employment having, in ignorance of what it requires, been degraded, it may not be so easily or so cheaply elevated as it otherwise would be ; but half the amount even of the portion of the money loss from accidents which is sustained by the shareholders, from acts of indiscretion of the men they employ, would, if estimated, show the economy of securing, by still higher payments, the services of a higher order of men.\*

In this view, as to the class of men employed in the management of steam-engines, I am enabled to cite the authority of Mr. William Fairbairn, the eminent engine-maker, of Manchester. In a recent report on the subject of the destruction of a number of work-people at Bolton, by the bursting of a steam-engine, in consequence of ignorant and careless management, he states, that “next in importance to ascertaining the cause of the accident, comes the consideration—how these catastrophes are to be prevented. This is a subject of such deep interest to the community, that it has attracted the attention of the leading governments, and of some of the most eminent scientific men of Europe and America. Legislative enactments have been passed, recommending remedies, and inflicting penalties ; but so long as men are careless of their own lives, and ignorant and careless of the consequences to others, there is little or no hope of improvement

\* A large class of “accidents” arising from the departures, delays, and different rates of progress of different trains, might manifestly be prevented by the use of the electric telegraph ; but the directors do not care to inform themselves, and their pecuniary responsibilities are not yet sufficiently strong to induce them to be at the expence of laying it down and working it properly. I am informed that on an analysis of a large number of accidents it was proved that nearly 30 per cent. of them might have been prevented by the proper use of the telegraph.

in regard to a better and more efficient management of steam-boilers, which contain within themselves, under proper control, the elements of a vast utility; but guided by ignorance, and abandoned to the effects of a blazing furnace, they become the agents of a destructive force, that leaves impressions too painful to contemplate. Familiarity with any sort of danger leads to callousness and neglect of due caution; and it is to be regretted that the general state of education in this country does not directly tend to the improvement of the engineer and his assistants. It is my confirmed opinion (now that the country is covered with steam and steam-engines) that the engineers, stokers, and firemen should be persons of some education. They should at least be conversant with the common rules of arithmetic, and should receive instructions in the more simple laws of physics; and, above all, they should be men of *sober habits and exemplary moral conduct*. In addition to these qualifications, they should be made acquainted with the properties of steam and the steam-engine, and should on no account be employed when found deficient in these acquirements. In the present state of intelligence amongst that class of men, we can scarcely hope for much improvement. It is, however, a subject well worthy of attention; and viewing the immense extent of steam power in operation, both on land and at sea, it is well entitled to the deliberate consideration of the legislature; and I am not without hopes that parliament will shortly entertain the subject, and cause the erection of seminaries, for the especial purpose of protecting the public, by the education of engineers." The way to obtain this end with the most certainty is to make it the pecuniary interest of the shareholders, or employers of machinery, to obtain educated men, and that is to make them responsible for the pecuniary consequences of employing the uneducated. Without this, no faith is to be put in provisions for education, for there can be no dependence that the specially educated would be fairly selected, or the extra labour and skill of the competent education would be duly appreciated or fairly paid for. The object will, I apprehend, be more easily and completely obtained by the simple action of a pecuniary interest without regulations, than by any probable legislative or administrative regulations, with penalties for their enforcement, acting without such an interest, or against it.

Some would prefer that prevention should be obtained by application of other motives than pecuniary interest, and it is desirable that the aid of all should be brought to bear; but penal legislation has been of little avail. Every fatal catastrophe is an appeal to the highest sentiments; yet how weak is the response! Self-interest is the most constant—the most uniform—most lasting, and most general feeling; and it appears, when traced in its ultimate actions, to be really one of the most powerfully beneficent. It at once arrests the attention; and the shrinking from pecuniary responsibility when it is proposed—the objections that it will be "too serious," and the efforts to evade it, all attest its efficiency. Competent and well-informed capitalists, who consider its operation duly, would not seek to evade it, nor would they dread to undertake such works were the responsibility imposed. Rashly, indeed, they would not undertake them, nor ought they.

I am informed that in America it has become the practice in several of the states to charge upon these undertakings the whole of their pecuniary consequences of accidents, and that the effect has been to give a check to recklessness, for which the companies' ordinary losses by the destruction of engines, and the loss of fares by temporary panics, were of themselves insufficient. But the efficiency of the principles has, under some circumstances, been long tried in this country.

When the convicts were first sent to Botany Bay, the losses of life which occurred during the voyage were tremendous, and it is stated, that on some voyages, the deaths amounted to as many as fifty, and even sixty per cent. of those embarked. The shippers were, no doubt, honourable merchants, chargeable with no *conscious* designs against the lives of those beings committed to their charge; but, by their interests, their thoughts were directed to profits—they got as much freight as they could, and did not see that convicts should not put up with inconvenience. By a simple application of the principle I would plead for, and the practical adjustment of their interests and responsibilities, by a short change of the terms of their contract, from a payment on the per head or number *embarked*, to a payment on the number *landed* alive, the face of things was entirely changed, and the average mortality has been progressively reduced to one and a half per cent., or even lower than the average mortality of such a class living on shore. The shippers, without a compulsory legislative provision thereto, paid for an officer of health, or medical officer, and put the whole of the transports under his charge, and transferred the responsibility to him, by making his remuneration proportionate to the number landed alive. From the medical men engaged in such service, I have derived the most clear information as to the practical measures for the prevention of disease amongst the labouring population.

Not long since, this principle was overlooked in the transport of emigrants, and some vessels were chartered and offered by government officers of high character. About the same time, an emigration took place under the agency of a voluntary association who had but scanty funds at their disposal, and they were, consequently, compelled to take the lowest contracts of the common skippers in the river; but they took them on the terms of payment per head, only on the numbers landed alive. Here was the pecuniary interest of mere skippers on one side, and rank and honour, and the associated sentiment on the other. A benevolent member of the voluntary association informed me, that on going on board to inspect the accommodations of the poor people before their departure, it was delightful to see the skippers at work, cutting holes in the vessels, and making, under the advice of the surgeons whom they had voluntarily engaged, most careful provision for ventilation. The emigrants, under the care of the voluntary association, arrived in perfect health, whilst in the other emigrant ships fever again broke out, and there was severe suffering and heavy mortality.

The principle of pecuniary responsibility is self-acting. It dispenses with agencies of inspection—and *a priori* regulations; it reaches where they could not reach, and renders arbitrary and troublesome interferences unnecessary—it is awake and active when authority and public attention, and benevolence and humanity are asleep, or



powerless. A surgeon who had served on board transport ships, described to me the toils of his service during long voyages—his sleeplessness on stormy nights—his vigilance for the change of the watch—his getting out of his hammock to see that the poor wearied sailors, whom he could not trust to themselves, took off their wet clothes before they turned in. On complimenting him on his sentiments of active benevolence, he frankly owned that he was only entitled to the praise of vigilance to his own interests;—the sailors were included in his contract—it was that which kept his thoughts intent on the means of preserving their health, as well as saving his own trouble in merely treating illness when it occurred, which is ordinarily considered the surgeon's sole duty beyond giving *general* directions for the preservation of health. The principle of pecuniary responsibility has been applied in the case of the shipment of pauper emigrants, and all the reports of its practical working have been most satisfactory. For every unavoidable and fatal casualty, it has secured for these cases "at least one sincere mourner."

The report of the commissioners, Sir Henry de la Beche and Mr. Thomas Cubitt, appointed to inquire into the causes of the destruction of a cotton mill at Oldham, whereby a number of the people were crushed to death, has the following passages in conclusion:—

"Though deeply impressed with the wrong which may be done by interference with private right, so long as such private rights are not at variance with the public good, and fully sensible how difficult it is to adjust regulations for the strength and stability of private dwellings, that improper intermeddling may be avoided, (though interference with the strength of private dwellings has been sanctioned by the legislature in a recent Improvement Bill for Liverpool,) that in cases where loss of life has been clearly proved to have been occasioned by the careless erection or wilful neglect of the proper strength of private dwellings, those who so erect such buildings should not escape harmless.

"To produce more care and punish wilful neglect, we would suggest that, upon clear and unequivocal proof being established of the fall of any buildings, at some reasonable time after their erection, from insufficient strength of any of the materials employed, and of loss of life having been occasioned thereby, justifying the infliction of a deodand by a coroner's jury, in accordance with the present practice, the attention of the jury should be especially directed to such deodand, to be considered in the light of a fine, applicable to, and to be distributed among, the families of those who may thus have lost their lives, and to and among those who may have sustained severe injuries preventing further labour, more especial attention being paid to cases in which such families or severely injured persons are thrown on public support."

May not such a passage and the accompanying evidence be hereafter adduced as proof of the barbarous state of mind of the time and the country in which it is thus propounded that the loss of life and severe injuries to persons, even by wilful neglect, unequivocally proved, is knowingly allowed to escape harmless, and the bereaved families allowed not only to be uncompensated, but to be thrown upon others for support? The very appearance of concern and inquiry, the investigations and circumstantial displays in case after case which end in nothing preventive, might be hereafter cited as further evidence of the depraved state of the public mind, and as serving only as daily excitement, by narratives which raise spectacles of blood and maiming, violence and pain. But I should deprecate

the exclusion from compensation of all cases where *wilful* neglect cannot be proved, because such rule would go farther than the commissioners contemplate, and exclude from redress not only the great mass of purely accidental cases, but the majority of the cases of the most culpable neglect. An engine, under the care of an ignorant driver, bursts, and destroys not only the driver but the persons near. It is "*supposed* to have occurred in consequence of extreme high pressure." But there are no means of proving this: it may have been in consequence of the defective construction of the engine. An engine runs off the rails, and the engine driver is killed and passengers are maimed for life. It may have been from some error, or the driver having been in a state of intoxication, which had arisen after he was at his post—but how are the sufferers to ascertain and prove this?

In the explosions of mines well known to be badly ventilated, the air doors are blown to pieces, the waggons dashed to atoms, the roof brought in by the violent concussion of the explosion. In such cases, it is rarely possible to collect out of the ruins clear proof of the operation of anything except the power of the destructive agent. The burden of the proof should be entirely on the other side—on the owners of the works to establish the fact of gross and wilful misconduct on the part of the deceased, if he were a servant; but this should not avail against the claims of third parties to compensation. Where such proof is not to be had, the presumption afforded by the fact of the death is, that it is not wilful, and that the deceased took all the care of himself of which he was capable. The claim to compensation, or to the insurance charges on dangerous works, is based on the assumption that such casualties are all "pure accidents." It is this rule, and this rule only, which avoids all "improper intermeddling." The responsibility for the pecuniary consequences, when placed on such works as an insurance charge, is not "a harm" to the owners any more than any other charges which the legislature may choose to impose for the public good. In its ultimate operation even they would find it not only no charge, but a pecuniary economy.

In some instances, the dawn of clearer views of justice and policy is observable in some of the companies themselves. A young woman, a governess, had both her legs crushed by an accident on the London and Birmingham Railway, and she was maimed for life. The Company purchased for her an annuity of a hundred pounds per annum. A passenger of the labouring class was recently killed by an accident. The company, I am informed by a director, undertook to maintain and educate his only child, a boy, until the age of sixteen or the period of working ability, on the crown foregoing its claim to the deadand.

I have ventured to express a confident opinion that in general, reckless and ignorant labour is in general dear labour. That this is so in railway labour admits of proof by the wide variances between expenditure and estimates, and by comparison with carefully constructed works. I have however no means of judging of the expenditure for the execution of the Summit Level tunnel, or whether it comes within this rule as to waste of money or not.

On mentioning to an eminent engineer of mining works in Cornwall the number of lives which had been lost in the working of

the Sheffield Summit Level tunnel, he at once declared that gross mismanagement was indicated by such a waste of life. It is apparent from the mortality returns, that in the progress of the deeper and more difficult mining work of Cornwall, though "accidents" do there occur, yet it is by no means in such frequency. Amidst some very difficult mining works in which upwards of three thousand labourers are employed, during three years there has been but one fatal accident. In the cutting of the Lichfield tunnel, which was perhaps as difficult a work as the Summit Level tunnel, it is not remembered that a single life was lost. In Cornwall the operations are systematised, and there is a better subdivision of employments amongst the labourers. The engineers and employers are from that circumstance and others, interested in the lives of the labourers; the loss of a single well-qualified labourer is an interruption to the working of the system, and is in itself a penalty; and this better superintended and more skilful labour, though well paid to the miners' families, is considerably cheaper.

As a common instance of the prevalent mismanagement and extravagance of railway labour, I am informed of one piece of work—the driving of a tunnel—which was let out for £57,000 to the first contractor, who within two days sub-let it for £47,000, making £10,000 by it, and that it was again sub-let and executed in the ordinary way. For this work, my informant, a mining engineer of Cornwall, had made estimates, and was prepared to have executed it (as a piece of mining work by Cornish miners, that is to say, in a comparatively superior manner) for £30,000. This recklessness of money (as well as of life) the public are called upon blindly to respect as outlays of capital, and to consent to have the main arteries of communication throughout the country tied and clogged in perpetuity by charges often of double the amount that would have been requisite for more skilfully and safely constructed works, constituting perpetual taxes on the transit of all goods, or produce, or persons, frequently more severe than the taxes on particular articles which have been the subject of national agitation.

It may be submitted for consideration whether, as an additional measure of security, new grants of privileges and powers involving the collection of large masses of labourers in particular places should not be accompanied by conditions for the proper accommodation and regulation of the workpeople under the inspection of a public officer,—conditions protective of their families, and especially of their children, against such evils as those partially displayed in the example described by Mr. Roberton. As one of the Central Board of Commissioners of Inquiry into the Labour in Factories, who with my colleagues, Mr. Tooke and Dr. Southwood Smith, recommended government inspection, I may receive with partiality the attestation of Mr. Roberton as to the satisfactory working of the principles of that measure, imperfectly as it was carried out. And it is just to observe that, had the educational provisions of the bill proposed in 1833 been adopted and carried out, the great proportion of the youth who formed the bulk of the mobs engaged in the wild outbreaks of 1842, the average of whom did not exceed eighteen years of age, would have passed through a course of



education and training that would have prevented, or at least abated them.

Notwithstanding the imperfection of the power of the inspectors, every candid person who reads the reports of these public officers, must admit that the mere right of inspection and duty of reporting have been of much service in keeping attention alive to the subjects of inquiry, and reminding employers (who in the pursuit of their trades forgot their own healths as well as the health and general condition of their work-people) that attention to order, cleanliness, health, and comfort was, as a matter of mere economy, conducive to easier and better production.\*

I would then submit for consideration, whether it may not be made an instruction to the committees who examine the new railway bills that they will inquire of the projectors of these new works,—What is the estimated number of labourers who will be required for carrying out the works in question? Where and how these numbers, with the wives and children of the married, are proposed to be accommodated in respect of their dwellings? Whether it has been ascertained that there is on or near any, and what parts of the line, sufficient accommodation, and at what rents? Whether there are any or what means of provisioning properly the numbers assembled, or preventing inducements to intemperance, or the sale of bad or inferior provisions, or breaches of contract by means of the truck system on the part of the inferior contractors, and what conditions are proposed in regard thereto in the contracts for work? How is the education of the children of the work-people to be provided for during the period of the engagement? What regulations are the promoters prepared to recommend or accede to for the maintenance of health and the treatment of sickness or accident amongst these assemblages? What securities they will give for the payment of the expenses of the sickness and accidents, and their consequences, occurring from the works? What arrangements they propose by the appointment of officers for the preservation of the peace? And if it appear or be objected that none of these points have been considered, (which were in itself a large objection, proving the case,) require that they should be; and when the regulations deemed proper have been agreed upon, that the committee shall report the powers which should be entrusted to some responsible public officer for seeing that the conditions are carried out according to their intention.

Habitations must be provided, and the only question to be determined is as to their adequacy and fitness. I must deny that it is impracticable to do better than to over-crowd workmen and their families in rude stone and mud hovels, located on undrained swamps, during the progress of the works. Portable wooden, weather-tight, and well-ventilated and comfortable houses are manufactured in London and sent out to the colonies. Such as these might be used in sufficient numbers, (with proper separations and accommodations for the married,) and these may be taken down and removed from time to time as the works proceed. Nor would the workmen object to reductions of wages, were that necessary, for obtaining healthful and comfort-

\* Vide the Reports of the Inspector of Mines.

able habitations. A weather-tight, warm, and ventilated wooden cottage, with an external covering of asphalted felt, (which is impermeable to wet and a bad conductor of heat,) for a labourer's family, with the separate sleeping-rooms requisite to preserve decency, one sleeping-room for the parents, one for male and another for female children, one living room and one pantry, containing 444 cubic feet, may be purchased for forty-three pounds; a rent of two shillings and sixpence per week would in general be willingly paid for it, and beds and simple but sufficient furniture might, I am informed, be supplied for another shilling per week. A good separate cottage for the single man might be provided and furnished at a remunerative rent of two shillings per week. Temporary schools for forty or fifty children might be provided for forty or fifty pounds, for which a penny per week for each child would, I am informed, suffice as rent. A small hospital, furnished with beds, and a small dispensary, might have been provided by the company at an expense of a hundred pounds. A temporary church of the description of the one in use near Hampstead, London, to accommodate eight hundred persons, with bell and steeple, might have been provided by the company for eight hundred pounds, and fairly paid for by a sitting rent of a penny a-week for each workman.\*

The proper reservations of wages as rent, were the managers of these works at the trouble to make them, would be so much in abatement of the evil of the drunkenness of the parents.

I would submit for the consideration of the promoters of such works, as well as an authoritative provision, whether some public officer with medical qualifications, as an officer of health, should not be appointed, with power to require that the location and construction of the temporary habitations and the accommodations are proper and sufficient for health and decency. An officer with the qualifications of an army medical inspector, accustomed to the care of large bodies of men, would superintend the execution of other regulations at least as well as any gentleman not specially instructed or experienced in relation to them. On the line of railway from Rouen to Havre between four and five thousand English labourers are located. The neglected condition of the children of these workmen engaged the attention of the worthy Protestant bishop of Paris, who obtained subscriptions to maintain schools for their education. But I am assured by a temperance missionary, who has visited the workpeople on that line, that every salutary precept that may be inculcated in the school during four hours each day, is very certain to be effaced by the impression of the examples during the remainder of the day amidst the scenes of drunkenness, quarrelling, and depravity in the temporary dwellings, where both sexes are crowded together in such a manner as to render the existence of feelings of decency, self-respect, and the connected moralities impossible.

It may be said, in respect to the habits of debauchery, that the directors of such works cannot control the labourers in the expenditure of their wages. Those who may say so are not aware of the

\* Made at Mr. J. Thomson's manufactory of houses and portable edifices, for emigrants, at Limehouse.

practical examples, such as those adduced in the Report on the Sanitary Condition of the population, page 245, on "the Employers' Influence on the Sobriety and Health of Workpeople by modes of payment which do not lead them into temptations to intemperance." I have the satisfaction to state that the promulgation of these examples has caused similar methods to be widely adopted in the manufacturing districts, where monthly payments have been changed to fortnightly, and fortnightly to weekly, with mutual advantage to the employers and the employed. I will cite one example, where, under peculiar circumstances, a daily payment of wages has been adopted by the manager of a public company carrying on gas-works.

In his report to the company the manager of the works states :—

"The system of paying the stokers daily has been in operation exceeding four months, and it affords me very great satisfaction in stating that a complete change has been effected in the habits and health of the men.

"I will point out the evils of the old system and the loss entailed on the company by it.

"The stokers of the night gang were paid their weekly wages on Saturday morning, on leaving their work ; having been on duty all night, it was natural that they should require rest, but instead of going home to bed and preparing themselves for the labour and fatigue of the following night, their uniform practice was to resort to the public-house, and there dissipate a considerable portion of their hard earnings. Many of them were constantly to be seen reeling home in the middle of the day in a state of intoxication. The consequences of these gross irregularities were seriously felt in the loss of labour to the company by the men being rendered utterly unfit for the performance of their duty, the heats of the retorts being lowered and the work generally neglected. It not unfrequently happened on a Saturday night, that five or six of the men have been absent through the effects of drunkenness, whilst others have been absent from alleged illness, produced from the same cause. In all these instances, the company have suffered severely, as men unacquainted with the duties have been substituted. The same evil occurred every week with the day gang, and many were incapacitated for their work on Sunday. To this general system of drunkenness and dissipation may be attributed the serious increase upon the sick fund, up to the time when the alteration in the mode of paying the wages was suggested, and which increase was one of the causes of inducing the alteration. Independently of the losses the company have sustained, the moral and physical condition of the men was in the most lamentable state of degradation. The bulk of their wages having been spent in drink in the course of a few hours, and the remainder early in the week, they were left destitute of the means of procuring proper food to sustain them. Hence, independently of sickness, they were driven to the lowest shops to procure on credit whatever food they could so obtain, the same being of very inferior quality, and charged at the rate of thirty per cent. above the price at which the best commodities could be obtained at the first-rate shops. Another description of misery these men brought on themselves by incurring debts at the low shops alluded to. If the proprietor is satisfied the man applying for credit is in the service of the company, he hesitates not to trust him, and I have frequently found in the letter-box of the office a dozen summonses, which have greatly contributed to their misery.

"Having as briefly as possible stated the general grievances of the old system, I have now to draw the attention of the court to the practical working of the new.

"It is more gratifying to perceive, that in the habits of the men an extraordinary improvement has taken place. The evil complained of in regard to the Saturday night gang, is completely removed ; the men come to their work cheerfully and without the slightest appearance of intoxication ; the work is as well done on a Saturday and Sunday night as any other. In short, the men are all regular in their attendance, and there are no excuses. From this source alone, I anticipate a considerable saving to the sick fund, which will be free from the abuse sustained under the old system.

"Although there were some of the men who at first objected to the plan of being



paid daily, it must be observed the objectors were of the lowest order of men, incapable of forming any opinion of what was most beneficial to their own interest, looking forward only to the largest quantity of drink they could procure with the means at their command. These men are, however, now contented with the present arrangement, while the majority have expressed themselves satisfied that the plan is calculated to improve their health and comfort.

"Having their money daily enables them to take advantage of the cheapest and best markets, and has effectually put a stop to the credit system of the publicans and small shopkeepers."

In every instance that I have met with, the interference of the legislature against the truck system has failed of obtaining the object, and has had more commonly the effect of aggravating the evils intended to be remedied. The statute against payments in kind has been injurious to the workmen by preventing payments in kind or in produce when it would have been the most beneficial mode, and sometimes the only mode of payment to them, as it frequently is to the labourers in the agricultural districts, and they have left untouched the practice in the hands of those who did not hesitate to violate the law, and give inferior commodities; they have tended to narrow the truck to one commodity—beer.

The intention of a nine-weeks' payment of wages in the case described by Mr. Robertson, cannot be misunderstood.

The practice of the truck as stated by Mr. Robertson has, I believe, prevailed in most of the railway lines, and in the present state of our legal procedure in England, it would apparently be impossible to prove it against the parties or prevent it.\* The labourer who might want employment has found that he could only get it on the recommendation of the beer-shop keeper, or the tally-shop keeper; the labourer has also found that somehow or other he could not retain his employment unless he took a certain quantity of beer from the beer-shop, or of

\* *e.g.* "WANDSWORTH.—On Saturday, four labouring men applied to Mr. Clive for summonses against a man named Davis, who is a ganger on the Richmond Railway, for the non-payment of wages. John Nagle, the spokesman of the party, stated that he went to work on the Richmond Railway at Barnes on Monday week. A man named Davis, who is the ganger on that portion of the line, engaged him and others, and agreed to give them 2s. 6d. a-day for their labour. When they asked for money Davis gave them what he called shilling tickets, and told them to go to his shop. Having no money, they were obliged to go to his shop, and be satisfied with what was given them. Applicant was certain that a shilling in money would purchase more, and do him more good than two shillings' papers; and he, with eight or nine others, asked Davis on Friday morning to let them have money instead of tickets. He said he could not settle with them then, and kept them waiting until 12 o'clock, when they were told, as they had broken the day, they were not allowed to go to work; so that, at the present time, they were without work or money. Mr. Clive: I am afraid you can make nothing of it. You have consented to be paid in tickets, and it is very probable that there is little or nothing coming to you. If, when you first went to work, you had refused to accept tickets, but required money, and the party had declined giving it you, then I would, upon your applying to me, have granted a summons instantly. Even now, I will grant you one, but I fear you will be throwing your money away. The applicant then said he would take a summons out, but on being asked for the fees—2s., he declared that he had no money. Mr. Clive observed, that he should not grant the summons, unless the fees were forthcoming. The applicant and the other men declared that they had not a farthing in the world, and left the court."—From the 'Times,' November 24, 1845.

goods from the tally-shop. A contractor, or even a railway director, has been seen in the back parlour of the tally-shop looking over the account-books. But who could *swear* that he was not looking over his own accounts, or not performing some act of disinterested friendship to the beer-shop keeper? The putting an end to the truck system might, in this instance—as it has in others—only have shifted the profits from the pockets of the contractor to a low description of shopkeepers, who charge twenty and thirty per cent. for no better descriptions of supplies, and prevented superior or equally good supplies being provided for them at a much lower rate of profit. In France the wages are required to be paid in money, and are so paid on the Rouen and Havre line, but it is there reported that the wages are only transferred to the hands of sub-contractors who keep truck or tally-shops.

I do not allege that prevention of breaches of contract for the payment of wages in money would be impossible, but submit that the inoperative law against the truck should be repealed, and contracts of hiring and service by workpeople, on condition of receiving stipulated portions of their wages in provisions, or supplies of wants on terms settled by written agreements be authorised. Well-appointed public inspectors would give the most effectual check to the fraudulent non-performance of contracts. The remedies are now, however, in the hands of the directors; their contracts for the execution of railway works are often undertaken at prices which their engineer, if he be a competent and honest person, must know cannot pay the contractors. I have been informed of one piece of work undertaken by a few contractors (of a condition not much above the labourers they engage,) who will lose by the work itself, but who will make upwards of £7000 by the truck of beer and inferior provisions to the workmen. Here the interests of the contractors in the sale of beer were greater than in the good execution of the work, and men under their arrangements were often at work in a state of intoxication. Now, from inquiries made of the foremen of navigators themselves, I am assured that it is a fallacy to suppose that strong drink is necessary to good work. They have declared that they cannot do their best work under its influence. Directors who are properly informed would see that such contracts and that incitements to intemperance were not the means to procure good work; they would take care that good water, or some suitable beverage was provided, (vide Sanitary Report, p. 251,) and that beer and fermented liquor were entirely kept away during the hours of work.

Whilst the direct temptations to intemperance admit of removal in the manner stated, facilities and inducements to providence may be given with very little trouble. The directors, or any one of them, might easily arrange a system for the reservation of surplus wages and their transmission to savings-banks to the account of any labourer, or they might save the labourer the trouble of weekly reservation, and of weekly transmissions, by allowing whatever he chose to have reserved to stand to his account, at the savings-bank interest, and be transmitted to any savings-bank for him at the termination of his work. An extra clerk would conduct all such business.

The foremen, and the better description of workmen, might be charged with the execution of proper regulations out of the working hours, and be sworn in to act as special constables when necessary.

It may be said of all necessary regulations—that they would be impediments to public works, and would be inconsistent with the spirit of such enterprises. Reckless enterprises they certainly would clog, and these all the sober part of the community, and those engaged in well-considered work agree, ought to be impeded. The latter they would eventually facilitate. Unless under such necessity as that of pumping to keep out water, which would flood a work, if there were any interruption, it may be pronounced apart from the consideration of the ordinances of the Sabbath as a day of rest, that such incessant work is not proportionately efficient work. Merely considering the labourer as a machine, it is as improvident a waste of power, as running post-horses every day in the week is found to be. It is true, indeed, that the contractors who may procure a full supply of labour for the immediate purpose may be careless of this waste; but are not the rest of the community bound to interpose to prevent the infliction of the “wastrels?”

I submit that the care of the health and moral condition of the labourer by such superintendence as described is, economically considered, an omitted division of labour. The principle of superintendence on behalf of the public having been sanctioned by parliament in the case of fixed employments in factories and mines, it is surely applicable, *a fortiori*, to such works as those in question, for which it may be urged it is at this time more needed than in the earlier stages of railway construction from the peculiar circumstances already noticed, which must diminish the superintendence of superior engineers, and increase the proportion of new and probably inferior descriptions of contractors and labourers, with increased temptations to disorder, from higher wages and diminished restraints. And it is reported that on several lines the disorder has already gone beyond former examples.

I might cite as proofs in support of these conclusions, as to the necessity of regulations—examples of their voluntary adoption on several works in this country. On some of these points I may adduce the example of at least one Railway Company. The Directors of the Chester and Holyhead Railway, of which Captain Moorsom is the chairman, have, I am informed, prescribed as conditions to their contractors, that the men shall be paid in money, and that they shall not be paid at public-houses, and, moreover, that the labourers shall not be compelled or allowed to work on a Sunday. About five thousand labourers, it is understood, are employed on this one line of railway. The directors, who are not known to be of any particular denominations of Christians, have employed Scripture-readers, selected by the town missionary and Scripture-readers' Society, to attend on the works, and give religious instruction to the labourers, for which the readers chosen are stated to be the best adapted and the most successful, from being nearest in rank to the class of the labourers.

I do not adduce invidiously the subsequent example, though it is just to state that the best of the larger public examples of the state consideration for the condition of such workmen must be drawn from abroad.



Some of the finest engineering work on the Continent has, I am informed by engineers, been executed in Lombardy and Tuscany. Amongst these, one of the most celebrated in progress is the improvement and drainage of the Maremma, which may, perhaps, be classed with the drainage of our fen lands, and the works of the great Bedford levels. The improvement of Maremma, conceived and executed by Alessandro Manetti,\* was no less in scope and extent than an immense warping, or the intersection of a low-lying marshy and unhealthy tract of 1200 square miles, or one-third larger than Cambridgeshire, with embankments, canals and flood-gates, for the purpose of retaining the muddy water of several mountain streams that were turned upon it till the earthly matter in suspension had subsided, and then to drain off the clear water by certain fixed channels into the sea. Nearly 4000 labourers have been employed during several years in forming these great works. These labourers were strangers, coming in crowds from Genoa, Pisa, the Abruzzi, and from different countries. First, as to food, the Report on this head says :—

“The supply of food for so many person gathered together in a district thinly inhabited, and destitute of all the conveniences of life, was a most important matter, and one which the Directors of these works had always considered most deeply—yet rarely or never have they had to interfere in the managing of the supplies. By degrees, and from various quarters, came huxters and provisioners of every sort of commodity, and in such numbers as quickly to establish a competition, which not only gave security to the Directors as to the certainty and abundance of supply, but procured also for the labourer (who was free to purchase where he liked) food, &c. of good quality and at a cheap rate.

“It was necessary to provide lodgings for the labourers. When the houses of the district were not too distant from the place of work, and were healthily situated, and sufficiently large to accommodate (*discreto numero*) a moderate number of persons, they were rented and provided with beds, and everything that the protection and rest of the labourers required. The Grand Duke recommended, also, to the directors of the works that they should not only be most careful in the choice of the houses, and in furnishing them with all necessary things, but also that nothing should be omitted that might be requisite to secure the good health of the labourers. Many places of lodgings were opened in the town of Grosseto, and others were established in Follonica and Piombino. But where the distance of the works from habitations rendered another arrangement necessary, this was done by erecting near the works temporary cabins built of wood and straw as sleeping quarters at night, and for shelter during stormy weather. These cabins or cottages, formed in such a manner as entirely to protect the persons inhabiting them from the inclemency of the weather, were as well provided with utensils and furniture as the regular lodgings. The furnishing of these houses was farmed out, and included not only beds and benches, but also fire, light, *good water for drinking*, iron kettles,

\* *Memorie sur Bonaficamento delle Mareinme—Toscane.* The Report drawn up by Ferdinando Tarlini, Secretary to the Board of the Corps of Engineers, 14th Feb. 1838. Florence.

and hot water for every occasion that the labourer might require. Thus the Directors had simply to provide the bare dwelling. The direction of these contractors was entrusted to well-experienced persons, who were responsible for the inspection of everything relating to the construction, repairing, and cleanliness of the cabins and lodgings, not omitting the precaution of using such proper disinfecting appliances as are in use generally in hospitals and places which are occupied by large numbers of persons. These overlookers or inspectors were immediately dependent on the Directors, by whom they were paid.

"It ought to be recorded," says the report, "that the Duke, in his frequent visits of the works of the Maremme, always occupied a portable wooden cabin, consisting of two bed-rooms, a kitchen, and a sitting-room; and his Excellency said, no time was more agreeably recalled to his mind than the hours spent in this habitation."

The strongest and most distinguished of the class of "Navigators," (so called perhaps from their having been employed principally in cutting canals and works of internal navigation,) are collected principally from the hills in Lancashire and Yorkshire, and are men of the finest physical stamina in the country. In strength and energy they have been exceeded by none in the United Kingdom, and equalled by none on the continent, and have been toiled after in vain by Norman, German, and modern Saxon labourers, who have failed to justify any claims to the same rates of wages. At present, on the average, they are stated not to last beyond their fortieth year; but with fair treatment, they would last in health and vigour their term of three-score. All who have gone amongst these Lancashire and north country navigators attest that, under the exceedingly rough exterior, are good mental qualities and susceptibility to mental cultivation and moral energy, and they deplore their demoralisation.

The chaplain of the Lewes Gaol, in speaking of them, says:—

"At the same time I must add, that no class of men, within the prison walls, has so much interested me, by their behaviour, docility, and thankfulness for instruction, as that of the genuine navigators. In not a few instances, a word of serious kindness has drawn tears from the eyes of these sturdy sons of toil; they have trembled to think of the heathen state in which they had been living, and have sat down at school, like children, to learn their letters, and applied themselves to the task with as much earnestness as they would dig through a tunnel.

"There is, I am sure, much encouragement as well as need to continue and increase the means of Christian instruction and admonition which have already been afforded, in some places, along this line of works."

One result of the debauchery and depraved mode of life of both sexes is, that the race is deteriorated. The children born and bred up in these crowded places are physically inferior to the parents, and are still more depraved morally. From the facts which have come to my knowledge, I again confidently repeat, that the disbanding of these larger bodies of work-people than have ever in our times been collected together, will, unless the consequences are averted by due precautions, be worse than even the disbanding of troops, and will be the creation of dangerous predatory hordes of vagrants whom it will be difficult as well as expensive to meet or repress.

The common, sweeping allegations of the uselessness of care, and

impracticability of doing any good with the work-people, are untrue even of the worst classes of them, who certainly are not the regular navigators. Mr. Rawlinson, after describing the vices prevalent amongst some of the railway labourers, thus proceeds:—

“From this statement many may consider the case as hopeless, but it is not so. If proper means are taken to provide for the spiritual, temporal, and bodily comfort and welfare of the men, they will become as orderly and well-behaved as any other portion of the community. It is only where they are in crowds, and situated as I have before stated, that all the evils develop themselves. The same men, under more favourable circumstances, are as orderly as can be desired. I will name one instance. During the throng of a large contract, on which I was engaged, some of the most brutal and daring men were natives of the district, who had taken to this mode of earning a livelihood, and, obtaining three or four times more money than they had ever earned before, they entered into all the worst vices of the worst men. One of them stated to me afterwards, that he had devoured seven pounds’ weight of meat, and drank nine quarts of gin and ale mixed, in one day, and that he invariably drank all his wages, and all he he could obtain on trust or beg besides. I name this to show the contrast under other circumstances. The great body of earth-work on this contract drew to a close, the men left for other localities, and those above-named were among the number. I had a quantity of work to do after the line was opened, and employed from thirty to forty labourers. About the commencement of this work, six of these men returned, and asked me if I wanted men, which I did, but knowing their previous characters, I hesitated, and told them my reasons for declining to employ them. ‘You know,’ I said, ‘that fifteen shillings per week are the wages I pay,’ (they had been earning from twenty to thirty shillings per week,) ‘and I do not feel inclined to give more, and you know I cannot do with disorder and drunkenness.’ I further stated, ‘I am aware that you are stronger and better working men than many I have at these wages, but then they are steady.’ They promised amendment, but demurred at the wages, and I concluded to put them to work on trial at eighteen shillings a-week, and they continued with me so long as I had a day’s labour to give them, and steadier working men never went into a piece of work. They continued sober and industrious, and I parted with them with regret, though in the throng and excitement they had been the terror of the district. This example may serve to show, that the cause removed the evil will cease; that is, let men have quiet homes, regular wages, good advice, and a good example, and they will appreciate the one, and imitate the other.”

In recapitulation I beg leave to observe that I have not offered one suggestion of practical means of prevention, that is not sustainable by the evidence of a practically working example, in some form or other. What may yet be done may be judged of from the consideration of what has been actually done in scattered instances, and of what there will be no rational doubt might have been done for the prevention of the grosser evils described. Where an interest and a will are created to prevent the evils described, the ways of prevention will



soon be found. Had the directors of the work described by Mr. Robertson, or through them the sub-contractors, been responsible for all the pecuniary consequences of the loss of life or limb incurred in their service, in all probability the accidents would have been reduced in number as low as the rate of loss experienced in the prosecution of the more difficult mining works of Cornwall. This simple measure of full pecuniary responsibility, (like the simple condition of the contract for the shipment of emigrants and convicts, that payments should be made only on the numbers landed alive) would have necessitated a better supervision, more able foremen, and to some extent, perhaps, a better selection of labourers, and have influenced beneficially the whole of the daily order and mode of living, as well as working, to an extent for which it would have been difficult to provide by *a priori* regulations. If it had been required that proper accommodation in respect to dwellings should be provided for the assembled work-people, the directors or contractors might have procured temporary or portable dwellings, such as are made for colonists, and these would have been better, and probably cheaper habitations than such as were to be found in any towns or villages along the line, and more conducive to the general regularity and efficiency of the labour by keeping the labourers together. The provision of proper dwellings includes due space, and the means of proper separations, by which the morals, as well as the health, of the work-people would have been better preserved. These assemblages are encampments, and might at least have the order of a camp maintained in them; and for regular provisioning, a direct and authorised contract of the hire of work-people, on the condition of providing for the wants of the workers in meat, drink, and lodging during their stay, would have been the best means of excluding both the frauds of the low contractors on the truck system, and the rapacious practices of the small shop-keepers. The work-people might have been provided with food from temporary kitchens, and with quarters as soldiers are provided, or by contracts on lower terms than those on which they could provide themselves, or than they would be able to obtain from the scattered public-houses or beer-shops near the line. The services of a few officers of such experience as quarter-master serjeants, would have been simply paid for by the economy, and have produced comfort, and given satisfaction and a better will and energy to the work-people, and have been amply paid for by the regularity and efficiency of the work performed. Giving to the navigator the double rations of meat, which he says his work requires, or to the miner his superior Cornish pies, or as much as they choose to ask, and allowing a fair indulgence in respect to beer; persons of experience in such supply confidently aver that the workmen might have been boarded in a superior manner, at from one-fourth to one-third less, and in many instances at one-half their present rate of expenditure for irregular and inferior diet. The unmarried man who had continued at the work during the whole period, instead of being dismissed at its completion penniless, and if he do not find immediately another job of work, becoming a discontented pauper, a mendicant, or even a depredator, might frequently have had transmitted and deposited to

his account in a savings' bank, a sum of forty, fifty, or sixty pounds, (of which there have been instances even under the present unfavourable circumstances,) and he might have returned home in good bodily as well as moral health, and in a condition of independence until new demands for labour arose. The expenditure of such sums for wages as one hundred thousand pounds for one piece of work, would admit of the payment for extra superintendence, including the education of the children, religious instruction, and medical treatment, to insure such results. This which might have been done, may yet be done, as in the example of the Tuscan work, with degrees of success proportionate to the care bestowed. And it may be well to point out that whosoever shall voluntarily make arrangements in which the comforts and interest of the work-people and their children are consulted, and well provided for, will in the competition which is likely to take place, draw to the better-regulated works the most sober, intelligent, trustworthy, and efficient workmen.

I now request attention to another set of evils inflicted by some railways upon numbers of the labouring classes, not engaged in the construction of them. In November 1844, I wrote to Mr. Laing, of the Board of Trade, who, I understood, was engaged in making some inquiries as to the operation of projected railways, to inform him of some evil effects apprehended from the terminus to one railway, which would occasion the destruction of a mass of houses occupied by the labouring classes in Manchester; the other, the formation of the terminus of the Cambridge and Lincoln line, which would occasion the removal of a large mass of houses occupied by persons of the poorest class in London.

In the course of the inquiry into the sanitary condition of their dwellings, it appeared to be necessary to ascertain the effects of the removal of old dwellings by the opening of new streets. The results of the inquiry, which was made through the relieving officers, was thus stated in the Report of 1842 :—

“The working people make considerable sacrifices to avoid being driven to a distance from their places of work; the poorest struggle against removal to a distance from the opportunities of charitable donations; and that where new habitations are not opened to them in the immediate vicinity, every effort is made by biddings of rent to gain lodgings in the nearest and poorest of the old tenements. To the extent to which the displaced labourers succeed in getting lodgings in the same neighbourhood, as a large proportion of them certainly do, the existing evils are merely shifted, and by being shifted, they are aggravated. On a survey of the newly-built houses in the suburbs to which displaced labourers can go, it appears that the labourer, to use the expression of Dr. Ferriar, is almost ‘*driven to hire disease*,’ for if he do not find any lodging near his place of work, he is driven to a choice amongst tenements of the character of those found in the parts of Kensington out of the jurisdiction of the Metropolitan Building Act, without sewers or drains, without water or proper conveniences on the premises, without pavements or means of cleansing the streets, where exorbitant rents are levied, where adequate means of moral or religious instruction are yet unprovided, and where they will suffer both in health and morals.”

Mr. Henry Austin, who was employed as an assistant engineer in conducting the works for the Blackwall Railway, when examined, was asked, in the course of the investigation before the Commissioners of

Inquiry into the circumstances affecting the health of towns and densely populated districts :—

“What is your observation of the effect of the formation of new lines of street, as a means of improving depressed districts, especially in respect to the labouring classes?”—“It is a frequent argument in favour of opening thoroughfares through densely crowded poor districts, the great blessing they will prove to the neighbourhood in distributing the inhabitants. In my opinion there cannot be a greater mistake. This crowded population may be displaced, but cannot be removed to a distance, for the nature or situation of the labourer’s employment will invariably determine the locality of his habitation; and until in carrying out such improvements suitable accommodation is provided for the disturbed inhabitants, the evils of over-crowding in the immediate vicinity must be fearfully aggravated. In the disturbance of the population to make way for the Blackwall Railway, I could not fail to observe that the same poor people continued in the immediate neighbourhood, which before was greatly overcrowded—although this railway cleared away some of the vilest property in London, I do not hesitate to say that it was an injury to the neighbourhood. I observe that the medical officers speak of this increased overcrowding as a cause of ill-health. It always must be so, unless a proper provision be made for the disturbed inhabitants: the labouring classes cannot go great distances from their work.”

The following question was put to him :—“Would it have been a hardship upon the Blackwall Company if, as the condition of their being allowed to take down a number of houses occupied by the labouring classes, they had been required at the same time to submit a plan for the reconstruction, and to undertake the reconstruction of an equal number of improved tenements for the accommodation of such of the population displaced as might choose to have recourse to them?”—“So far from its being a hardship, it would in my opinion, in all improvements be a general advantage. In the case of the Blackwall Railway particularly, as they were compelled to purchase many plots of ground which they have not known what to do with, and are still lying waste, would have answered this purpose well. They would have realised a fair interest, and the parties displaced have got a better tenement even at lower rates. I would decidedly recommend such a provision as the condition of improvement bills.”

In this particular instance, the speculators, who have hitherto failed in obtaining a remunerative return from the railway, would at once have succeeded in obtaining upwards of six per cent., and probably eight per cent., on the construction of improved new dwellings. The dwellings of the labouring classes are usually constructed by the lowest description of capitalists, common builders and workmen, who are neither sufficiently well informed to seek for improvements, nor rich enough to engage professional talent to carry them out. They are driven to seek large returns or exorbitant rents for their small outlays. It has appeared to be hopeless to expect persons of that class to carry out those great improvements of which the dwellings of the lower class are susceptible, and such improvements can only be expected when made an object of attention to capitalists commensurate with their importance.

Since the works referred to were sanctioned, numerous plans of other new works, involving large displacements of the population, have been brought forward. It now appears that plans have been advanced in various stages for twenty-one different lines, comprising one hundred miles of proposed railway within a circle of five miles from St. Paul’s. The spaces scheduled within a circle of fourteen miles of St. Paul’s constitute an area of little short of two hundred acres, or nearly one-third of the city, or one-half of that devastated by the great fire of 1666. It is stated that, on a moderate calculation, they would involve the destruction of between 9000 and 10,000 houses, and cause an ex-



penditure for the purchase of property alone of about fifteen millions sterling.\* Each line has been separately laid down without any knowledge of what is proposed by the other. It were a low average to assume only five inhabitants to each house in such crowded neighbourhoods, and the complete execution of the proposed works would involve the displacement of a population of from fifty to eighty thousand persons in the metropolis alone, entailing such consequences as those experienced in the cutting of the Blackwall Railway; and similar works are in progress or projected in Manchester and other large towns. The magnitude of the new plans affecting the metropolis may be judged of from the fact, that it is as if it were proposed to raze Derby, or Leicester, or Nottingham, or Norwich, which contain no greater amount of population, without staying to inquire what was to become of them, or whether any or what provision was to be made for them. From Birkenhead and several other places examples might be adduced of the great improvements in the construction of dwellings, with improved ventilation, drainage, water supplies, and sanitary improvements which might probably be accomplished, if attention were properly directed to the collateral effects of such works, and privileges were conferred on a full view of their immediate consequences.

Under such circumstances, I would submit for consideration, whether it would not be a proper instruction to the committee appointed to examine the railway projects which involved the removal of existing dwellings, that they require the parties to inquire and show, whether there are near the houses proposed to be removed, a sufficient number of existing untenanted houses, and fitting for the accommodation of the population displaced? And if not, that the promoters should produce plans for an equal number of new and suitable dwellings which they (or others) are prepared to erect for the proper accommodation of the displaced population, or simply to inquire whether anything can be done in respect to them?

In conclusion, it may be proper to state that the observations above submitted are directed mainly to the suggestion of legislative precautions in the execution of these works, and remedies for previous neglects, and not in any spirit of detraction of the great public utility of the works themselves. I cannot, however, concur in the common apology made for the former neglects, that it was impossible to have foreseen the extent to which these new works would be carried. The extent to which they might be carried, and the influence of such works on the internal communication of the commerce of the country, were distinctly foreseen, and pointed out, and urged by Mr. Thomas Gray, of Leeds, in 1822, in a treatise, of which five editions were sold before the first railway was undertaken by the capitalists of Lancashire, in 1825. In this treatise a system of direct lines of trunk railways, such as are now allowed to be in the main the most eligible, was distinctly traced out. The mechanical and other experience of the first railway, it is now acknowledged, afforded data, had they been duly

\* Vide paper read by Mr. C. Fowler at the Institute of British Architects, Jan. 26.

considered, for precautions in relation to the remainder. The reports of the Commissioners on a system of railways for Ireland, in 1838 and 1839, still further advanced the conclusions as to the necessity of further precautions, which subsequent experience has confirmed. The legislation of the continental states has secured to the public reduced rates of transit and protective control, and the reversion of the works to the next generation, and systems of free communication, which will not then, probably, be obtainable in this country without immense sacrifices.

Nevertheless, the preponderant benefits derivable from these works are unquestionable and immense; but it need scarcely be stated, that no unnecessary sacrifice of life, no preventible evil, is justified by the existence of any amount of positive good. It is no justification of the sacrifice of life and injuries done to the public by the employment of indiscreet and incompetent men, and erroneous and defective arrangements on the railways, to say that the sum of good derived from them is greater than the attendant evils, or that such loss and injury in the construction of the new works are not so great in the aggregate as the loss of life occasioned by ignorant and careless coachmen and drivers, and accidents on common roads—which I believe is the case. The real question is, are the evils themselves necessary, or greater than they should inevitably be?

When the railways are constructed and in action, they display the beneficial operation of what I deem an important principle, that in the advanced stages, improved machinery demands labour of a higher and improved order for its management. The labourers employed on the railroads, who have superseded the classes of stable boys, post boys, and common coachmen, are a superior class of men, better paid, better trained, better dressed, (after the example of the best force in the public service, the metropolitan police) better housed, and superintended by officers of better education than have heretofore been engaged in the service of the conveyance either of persons or goods.

The Directors of the London and Birmingham Company have built dwellings for their work-people at Wolverton, which are stated to be of a very superior description, and have provided schools for their children, and for cases of sickness and accident have, it is stated, made such liberal provision as sustains the mind under affliction, and increases the chances of cure. From inquiries in respect to improved habitations for work-people made by the Chairman of the Brighton Railway Company, I believe the attention of that Company has been earnestly directed to the subject. Many of the station-houses on the new railways may be noticed as valuable improvements in themselves, and as examples of good construction and improved arrangements.

It has been stated to me, that on one of the lines of railway out of Manchester the reduced fares for the third class passengers, and for all classes for the short stages, have proved so far productive, that the system will probably receive early extension, it being already found that this conveyance is cheaper to the working men than walking, and yet the lower charges are more remunerative to the capitalists than the high fares on the smaller numbers. When this principle of low fares

with good accommodation for large numbers becomes more extensively applied, whether by the daily conveyance of greater numbers of the middle classes, or of the working classes, out of town, to more salubrious suburban residences, benefits of the highest order will be conferred on those residing within the town, by relief from continued overcrowding; and those enabled to go out of the densely populated neighbourhoods, live and enjoy good health at distant homes, where the charges for the daily conveyance may be made up by reduced rents, afforded by the less pressing demands for space for appropriate habitation.

With observation and guidance to avoid the evils which experience proves to be the result of defective management, and some care to secure to the labouring classes employed the proper advantages of the increased wages, the application of capital on these great works for quickening and cheapening the communication, and the demand for labour between county and county, and town and town, will, next to the expenditure of capital in the sanitary improvement of the towns themselves, conduce to the greatest moral and social improvement of the population that has been effected in our time.

[The substance of the preceding observations having been shown to Mr. Rawlinson, he stated the results of his own practical experience and observation in the following paper.]

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DESCRIPTIVE REMARKS RELATIVE TO RAILWAY CONTRACTS AND RAILWAY WORKMEN. BY ROBERT RAWLINSON, Esq., ENGINEER TO THE BRIDGEWATER TRUST.

*December 27, 1845.*

THE following remarks are not intended to censure any man or particular body of men, but to direct attention to evils and imperfections more or less connected with the progress of all public works, where large bodies of men are temporarily drawn together to perform labour dangerous to life and limb, and under present circumstances highly destructive of their health and morality.

All public works are not equally bad, nor have the health and morals of the men been totally neglected in all cases, but the good is from individuals, and not from wisely-arranged regulations made imperative and properly enforced by the legislature on all parties employing manual labour for the benefit of companies or individuals.

Government interference may be objected to, on the ground that public works are not conducted in a worse manner now than formerly; but society having advanced in civilisation, this argument cannot be received. The question to be decided is, Can the crime, disease, misery, and danger now attendant upon public works be abated?—and if so, by what means?

To show the necessity for some form of interference to direct and control companies in carrying out extensive works, I will describe a railway contract under progress, as at present carried on.

All contracts are not exactly alike, but the principal features of the case will be near enough for practical purposes.



Contracts are not always let to the lowest tender, the character of the contractor being more looked to than the amount of the tender, as it has been frequently found by experience that apparent cheapness in the first letting is not always economy. Contracts are let with an understanding that the work is to be completed in a given time, or heavy penalties incurred. Contractors having large capitals are chosen, and high prices are paid to enable them to accomplish this. Contracts so let, have, by especial agreement with the companies, to be carried on night and day, summer and winter. This great haste occasions much of the evil connected with heavy railway works, and also much extra expenditure on the part of the companies.

As heavy cuttings are now carried on, there is much of danger to life and limb from sudden falls of earth. Each contractor takes the method he deems the most profitable to himself; or the men choose their own plan, as the work is frequently sub-let to "gangs," the contractor finding all necessary implements and material. The excavation is worked to a vertical face, varying from six to twelve feet or upwards, and this is undermined at the bottom, to produce a large fall of earth, as by this means the compact ground is broken into masses convenient for filling into the waggons. A careful gang of men will place one of their number above to watch the ground and give notice of any motion taking place during the time the men are undermining the face, or, as they technically term the last operation, "knocking its legs from under it." If the earth do not fall during this process, sharpened iron piles and bars are driven in above, to force the ground down. With proper care, this is the legitimate and most economical way of working a clay or marl excavation; but new men, strange to this kind of work, are ignorant, confident, and careless, and in the dark, during long winter nights, it is very evident that the danger must be increased even to the sober and careful men; but how much more so to novices half intoxicated! The majority of all the accidents happen thus, and, as will be stated by the directors, engineers, and contractors, in vindication of the system, truly enough, in one sense, from "the men's own fault."

Where excavations are worked in "lifts," or "benches," with a vertical face, for the purpose of undercutting such face to bring down "falls," or large masses of earth, (varying from ten to fifty tons at a time, according to the width and height of the face,) it must be evident there will be a maximum height for every such face of earth: and this will vary in each separate cutting, or excavation; and at times, in different parts of the same cutting. Some excavations may be worked with a face of ten or twelve feet, more safely than others at six or eight feet; but, as excavations are at present frequently managed, the sub-contractor or gangs of men, to whom the work may be let, choose their own height; and as more money can be earned by bringing down large falls of earth, a dangerous height is often adopted; and then men new to that form of work are frequently either killed or permanently injured, by being caught under such falls. Many of the fatal and serious accidents which take place on railways, and other large excavations, result from ignorant or avaricious mismanagement in this department. The coroners' returns will show many such verdicts as, "killed by an accidental fall of earth whilst at work," and as the

coroner and jury know nothing about the nature of the work, and its attendant circumstances, where the man lost his life, and as it is generally "proved" to the jury, that "it was the man's own fault," accidental death is returned; and it is also stated, that the contractor or company are free from blame. Would this be so if all the facts were known and stated before the coroner?

Many lines of railway, when forming, have locomotive engines employed upon extensive excavations, to remove the earth to form the adjoining embankments, and this is conveyed in the common waggons used by contractors, which waggons are mounted on cast iron wheels. These do well enough for a speed of three or four miles per hour; but the men, having the means, with the engine, of attaining higher velocities, the temptation generally proves too strong; and the labourers leaving or going to work, frequently mount the laden or empty waggons to ride to or from their distant lodgings. A wheel breaks, or the train is thrown off the new and roughly-formed road, and if no life be lost, two or three legs or arms may be broken, or other injuries as serious takes place; still the old remark comes in, "it was the men's own fault."

Horse-barrow-runs, waggon inclines, laid with temporary rails, &c., are dangerous even during the summer season, when there is much light and general warmth; but during the darkness and inclemency of winter, working day and night, the danger is increased tenfold. In working horse-barrow-runs, many men are seriously wounded and lamed, but it is principally thus:—Strange men are anxious to try their hand at this, to them, new kind of work; and, Englishman-like, the danger is its recommendation. They take hold of the barrow, get up a portion of the height, and then lose confidence, fall off, and are frequently seriously hurt; but still, "it is the men's own fault."

Contracts worked night and day are a temptation to some of the men to overtask their powers of endurance; and, at times, when a portion of the work requires to be urged on, and men are scarce, the contractor will request the men to work double or triple shifts, that is, twenty-four or thirty-six hours on a stretch, one hour for a meal being the longest interval of time they can be off work during this period. Boys employed to drive the horses will do the same. When nature has been so taxed, lassitude and sleep come upon the parties, and they either put themselves carelessly in the way of danger, or they have not sufficient energy to escape from it. The boys sleep on the waggons, fall off, and are run over; but if both men and boys escape accidents, their health is injured, cold is taken, and fever is generated; and the injury done to the constitutions of the men in producing disease not only present but prospective cannot be calculated; yet the same answer may be given, "it is the men's own fault."

As stated above, most of the evils complained of, which lead directly to accidents affecting life and limb, are more or less connected with the ignorant thoughtlessness of the men, but I think it will be seen that proper regulations would put it out of the power of the men to run such risks. For instance, if it is necessary to work an excavation by means of vertical falls of earth, as described, careful, sober, and experienced naveys alone should be employed; or such a combination of new hands and naveys as would insure safety; and work of this cha-

racter should not be carried on by night, during winter : as the most careful and experienced men cannot guard against sudden falls of earth during dark wet nights.

That men and boys may be hindered from working longer than one shift, or ten hours at a time, will not need any arguments to prove. Again, locomotive engines, working over temporarily formed roads, drawing common earth-waggons, may be prevented running more than five or six miles per hour ; and the men may be hindered from riding on such trains, whether light or loaded : as common waggons, mounted on cast-iron wheels, are never safe, even if the roads were in good order. Horse-barrow-runs may be included in the same list of regulations. It should not be considered a sufficient excuse to say, that "the men injured had no business on it," (the barrow-run;) means may be adopted to put it out of the power of the men thus voluntarily to risk danger.

In open cuttings night-work in winter is most destructive to the health of the men, and is also most dangerous ; accidents are unavoidable in the dark—especially if the weather be broken and wet. Night-work is also much more expensive, as well as dangerous. Fires and lights have to be provided and placed in readiness during the day, but should the night set in wet so as to prevent the work going on, there will not be many of the coals found in the morning, especially if the work is in a district where coals are expensive. The destruction to all kinds of material is also much greater where night-work is carried on ; planks, barrows, and waggons are broken, rails and chairs are lost and buried in "the tip-head," and it is utterly impossible for the men to get through the same quantity of work as during daylight. There is only the one excuse can be urged in its defence. It enables the Directors to open their line a little sooner ; but is this a sufficient reason that all the increased cost, producing so much human misery and degradation, should be incurred ?

Night-work is never beneficial to the contractor—but the reverse : it is scarcely possible to calculate the cost of work so carried on, especially if the seasons are wet, and the material to be removed from the excavations to form the embankments is marl or clay. No man can calculate within 25 per cent. the cost of such work ; and should the full amount of the contract be about £100,000, this constitutes a serious item in the amount. Look at such a contract under these circumstances. The new broken ground in the excavations is, by man and horse, worked into an adhesive mud, knee-deep ; the newly-formed embankment is in a worse state, the horses' feet and legs are cut with the rails and sleepers, or the mud and wet produce disease in their legs. The temporary railways cannot be kept in order, the newly-formed embankment slips out at the base, and subsides at the top ; the end of the embankment, or tip-head, cannot be kept up to its level ; the wet earth, by being shaken into a consistency like bird-lime over the uneven rails will not leave the waggons, and frequently, waggon, rails, and sleepers fall over the tip-head ; and if it is in the night, are buried. The men and horses are almost powerless, and quite dispirited ; and the poor contractor is bewildered, or wrapped up in despair. The savings of a life may be lost in a few months.



This example may serve to show that undue haste is not to the benefit of the contractor, and when rightly considered it is not profitable to the company, or advantageous to the public; but to the contrary, as the public are expected to pay for the construction in dividends, and are also burthened with the extra cost of a demoralised and diseased population.

Heavy contracts are frequently required by the directors to be completed in one or two years, to do which requires the combined labour of one or two thousand men. The district in which the work is to be performed is rural, thinly peopled, with, probably not healthful accommodation for the poor inhabitants already resident there; yet into this district is this numerous body of strange men tempted, by high wages, to pass one, two, or three years, in a dangerous and life-wearing occupation, each man being left to lodge or live as best he may. The poor inhabitants are tempted, by money, to lodge as many as they can crowd into their poor, old, and badly ventilated houses. The work being carried on night and day, the beds are let double, cleanliness is not attended to; house comfort, which ought to be so sacred to Englishmen, cannot be known; a separation of the sexes is not attended to, and so the morals of the female population are hopelessly corrupted, and the characters of the males are brutalised. No part of the world can show a more degraded, beastly association of human beings than communities of men and women so situated: civilised language will not allow of its description. Bad as is the accommodation, many of the men have to travel five miles and upwards to and from their work, and consequently, their clothing is often wetted through; which, combined with the lodgings as described, produces disease to a most destructive extent. Filth and vermin also abound.

Many of the men are reckless, but what is the cause? No man cares for them; they labour like degraded brutes; they feed and lodge like savages; they are enveloped in vice as with an atmosphere; the sensual, only, is present. The "naveys," from the nature of their employment, and their hitherto utterly neglected state, form as it were, a distinct race, and have names, laws, and customs, common exclusively to themselves. Many never hear their real names pronounced, but are entered in the contractors' books, and spoken of and to, as Gipsej Joe, Fancy Bob, Bellerophon, Fisherman, Fighting Jack, Brummagem, Long Sam, &c. &c. They have a marriage ceremony, which consists in the couple jumping over a broomstick, in the presence of a room full of men, met to drink upon the occasion, and the couple are put to bed at once, in the same room. I have known an instance of one woman, not twenty years of age, so married to six different men in less than three months.

Change of scene is a strong feature in the character of the men, and when work is brisk, no inducement will keep them steadily at work. As shown, they have not comfortable lodgings; they drink, quarrel, fight, and leave; and thus their lives are one continued round of hard work, drunkenness, and poverty. Amidst all this animal misery, there is the still darker picture of moral and spiritual neglect. Few of the men pay any respect to the Sabbath, and private reading or prayer is out of the question in such lodgings as they occupy,—not because the

men are never religiously inclined, but because circumstances prevent their turning their thoughts to things pure. Deliberate evil surrounds and tempts them. Beer-shops and unlicensed grog-shops are placed in their way by avaricious and designing men, but no man solicits them to good. Many of the sub-contractors pay their men in beer-shops; indeed many of them keep such shops, and also sell spirits; in most cases without a license.

Tommy-shops, truck-shops, or tally-shops, cannot always be dispensed with; properly regulated, they may be a great good, as the native shopkeepers and hucksters always try to take advantage of the new comers. Let the men be paid in money, and go where they choose, to purchase; and if the contractors or company set up a shop or shops, let them publish a scale of prices, and submit all their proceedings to the inspection of a properly authorised person whom government may appoint, and little evil and much good would be the result.

Paying the men fortnightly, or monthly, or even weekly, is always attended with loss of time, drunkenness, and brutality, for one or more days after the pay day; and the greater the number of men there are, the more violent and disgraceful are the scenes. If large bodies of men were subdivided, and a portion received their wages every day in the week, the majority would always be at work; the few really vicious only would drink; the better inclined would be led to work by the example of the majority. This plan was voluntarily acted upon by an intelligent contractor engaged in the formation of a portion of the London and Birmingham Railway, and found to answer exceedingly well.

At present, many regulations are made by contractors and men for the support of the sick and payment of a surgeon. They also subscribe towards a funeral, and frequently attend it, but drinking is the end of it; and the sick club's or surgeon's money may or may not be levied; a kindly contractor will do it; a careless or avaricious man will not. Some men will pay, others refuse and quarrel about it,—and these are always the worst characters.

As may be expected from the condition in which the men lodge and live, disease breaks out amongst them, such as fevers, small-pox, &c.; those who have homes to go to leave their work and return to them, but as many have travelled from a considerable distance, and have never saved one farthing of their earnings, they become miserable objects indeed! Being in a strange district they are only accommodated so long as they can pay, and as there is no hospital provided for them when sick, they are thrust forth into the lanes and fields to shift for themselves, or die, or probably to carry their infectious disease into other districts. I have seen men with small-pox thick out upon them wandering about in the lanes, having no place of shelter to go into.

All the degradation, iniquity, and misery here narrated, is no more a necessary consequence of public works, than plague was to past populations, or than fever is now. If proper means be taken to provide for the spiritual and temporal welfare of the men, they will become as orderly as any other portion of the community. It is only where they are in crowds, and situated as I have before stated, that all the evils

develope themselves. The same men, under more favourable circumstances, are as well behaved as can be desired.

Abundance of work, and money to pay for it, ought to be a blessing to the whole community; and, properly regulated, they would be so: but readily earned money, spent in vicious pursuits—as here feebly delineated, is the greatest curse that can afflict a civilised community; language cannot describe the length in abandoned wickedness to which large bodies of uncontrolled men will go. They are a scourge to each other, and a terror to the district.

The genuine “navey” is an open-hearted, hard-working man, careful in his work how he exposes himself to unnecessary danger, and is generally civil to all persons placed over him. The worst men are the agricultural labourers of the district in which the work may be situated. These men have generally been poachers and bad characters before they take up with railway work; and, obtaining more money from contractors than they ever earned before, they give loose to all their bad passions, and thus bring disgrace upon the whole body of men; but the true “navey” does not associate with them in his work, though all are mixed up in the beer-shop, and its attendant vice.

Because the evils enumerated do exist, it does not necessarily follow that railway directors, engineers, and contractors, are more cruel or selfish, than others engaged in trade. These evils exist because no recognised laws have been made to guide and regulate the whole machinery of our public works, to say what shall, and what shall not be. If two thousand men are required to perform the labour in any given district, the parties to be benefited by that labour ought to see to healthy lodgings being provided, and the moral and spiritual welfare of so large a body of men ought to be cared for. Such care should be a part of the system, and not be left, as now, to chance, or the benevolent feelings of a few Christian directors, contractors, and others. Where such good men have laboured for the real welfare of the “naveys,” it has been with marked advantage. On such contracts no rioting breaks out; there is much less drinking, swearing, or other forms of vice and crime.













